

B.2.2 Beneficiaries

Part. No.	Participant organization name	Short name	Short description
1	Istituto Nazionale di Fisica Nucleare	INFN	<p>INFN represents all Italian institutes working in Nuclear and Particle Physics. It runs Research Units within Universities (Sezioni) and National Laboratories and is involved in many activities worldwide.</p> <p>INFN has specific roles in WP1 (MAN), WP2 (TORIC), WP3 (TMDnet), WP4 (QCDnet), WP5 (PrimeNet), WP6 (SPHERE), WP7 (FAIRnet), WP8 (ReteQuarkonii), WP9 (LEANNIS), WP14 (LNF), WP17 (FPCC), WP19 (FutureJet), WP20 (DIRCs), WP22 (LatticeQCD), WP23 (HardEx), WP24 (JointGEM), WP25 (PolAntiP), WP26 (ULISI), WP27 (JETCAL) and WP28 (SiliconMultiplier).</p> <p>INFN has the responsibility of WP1 (MAN), WP3 (TMDnet), WP7 (FAIRnet), WP14 (LNF), WP17 (FPCC) and WP27 (JETCAL).</p> <p>EC funds in WP1, WP2, WP3, WP5, WP6, WP7, WP8, WP9, WP14, WP17, WP19, WP20, WP22, WP23, WP24, WP25, WP26, WP27, WP28.</p>
	<i>INFN Sezione di Bari</i>	<i>INFN-BA</i>	<p><i>The Bari group is involved since many years in the design of particle detectors and data analysis. It has particular experience in RICH design and construction of aerogel detectors. INFN-BA has specific roles in WP8 (ReteQuarkonii, V. Manzari), WP17 (FPCC, E. Nappi), WP22 (LatticeQCD, L. Cosmai), WP23 (HardEx, R. De Leo) and WP24 (JointGEM, A. Ranieri).</i></p> <p><i>EC funds in WP17.</i></p>
	<i>INFN Sezione di Catania</i>	<i>INFN-CT</i>	<i>The experimental and theoretical Catania groups are involved in nuclear physics aspects of</i>

			<p>hadronic physics and have a wide experience in the design and construction of particle detectors.</p> <p>INFN-CT has specific roles in WP2 (TORIC, V. Greco), WP6 (SPHERE, G. Raciti), WP7 (FAIRnet, G. Raciti) and WP27 (JETCAL, A. Badala).</p> <p>EC funds in WP27.</p>
	INFN Sezione di Ferrara	INFN-FE	<p>The Ferrara groups play a very active role in the field of superconducting magnets, target cells and particle detectors. They are also involved in state-of-the-art data reconstruction and analysis.</p> <p>INFN-FE has specific roles in WP3 (TMDnet, M. Contalbrigo/A. Drago), WP7 (FAIRnet, D. Bettoni), WP20 (DIRCs, D. Bettoni), WP22 (LatticeQCD, S. Schifano), WP23 (HardEx, P. Ferretti) and WP25 (PolAntiP, P. Lenisa).</p> <p>EC funds in WP20, WP22, WP23, WP25.</p>
	INFN Sezione di Genova	INFN-GE	<p>The Genova group has a worldwide reputation in the design and construction of cluster-jet targets and magnets.</p> <p>INFN-GE has specific roles in WP7 (FAIRnet, R.Parodi), WP19 (FutureJet, M.Macri), WP22 (LatticeQCD, M. D'Elia) and WP23 (HardEx, M. Ripani).</p> <p>EC funds in WP19, WP23.</p>
	INFN Laboratori Nazionali del Sud	INFN-LNS	<p>INFN-LNS plays an essential role in nuclear and hadronic physics. It operates a superconducting cyclotron yielding proton beams up to 100 MeV and is involved in major abroad activities (Grenoble, GSI).</p> <p>INFN-LNS has specific roles in WP2 (TORIC, V. Greco).</p> <p>EC funds in WP2.</p>
	INFN Laboratori Nazionali di Frascati	INFN-LNF	<p>LNF operates the DAPHNE storage ring and is involved worldwide in many outstanding experiments. It has a long tradition in accelerator physics and detectors design and</p>

			<p><i>construction. In addition to the locally performed experiments, state-of-the-art data analysis for SIDIS processes (HERMES) has been and is being performed at LNF. Researchers are also involved in JLab experiments and, more recently, in the ALICE experiment at LHC-CERN. INFN-LNF has specific roles in WP5 (PrimeNet, C. Bloise), WP6 (SPHERE, V. Lucherini), WP9 (LEANNIS, C. Curceanu), WP22 (ReteQuarkonii, M. Lombardo), WP23 (HardEx, P. Rossi), WP24 (JointGEM, C. Bencivenni/C. Curceanu) and WP28 (SiPM, C. Curceanu).</i></p> <p><i>The coordination of HadronPhysics and Hadronphysics2 is performed at LNF. INFN-LNF has the responsibility of WP1 (MAN, C. Guaraldo), WP3 (TMDnet, E. De Sanctis), WP7 (FAIRnet, P. Gianotti), WP14 (LNF, C. Guaraldo) and WP27 (JETCAL, V. Muccifora).</i></p> <p><i>EC funds in WP1, WP3, WP5, WP7, WP9, WP14, WP22, WP23, WP24, WP27, WP28.</i></p>
	<i>INFN Sezione di Pavia</i>	<i>INFN-PV</i>	<p><i>The INFN-Pavia group has a long tradition in theoretical hadron physics, ranging from theoretical models of hadronic wave functions up to phenomenological analyses of SIDIS processes and the study of fragmentation functions.</i></p> <p><i>INFN-PV has specific roles in WP3 (TMDnet, M. Radici), WP4 (QCDnet, S. Boffi), WP5 (PrimeNet P. Pedroni), WP7 (FAIRnet, P. Montagna) and WP23 (HardEx, S. Boffi).</i></p> <p><i>EC funds in WP23.</i></p>
	<i>INFN Sezione di Pisa</i>	<i>INFN-PI</i>	<p><i>INFN-Pisa is active in promotion and coordination of research on the fundamental building blocks of matter. The activities, both theoretical and experimental, are in the fields of subnuclear, nuclear and astrophysical research. State-of-the-art technologies and research tools are being developed.</i></p> <p><i>INFN-PI has specific roles in WP22 (Lattice QCD, A.Di Giacomo) and WP28 (SiPM, A. Del Guerra).</i></p> <p><i>EC funds in WP28.</i></p>
	<i>INFN Sezione di Torino</i>	<i>INFN-TO</i>	<p><i>The experimental and theoretical Torino groups play leading roles in the fields of QGP,</i></p>

			<p>nucleon structure and hypernuclear physics and have gathered great experience since many years. In particular, the Torino theory group is internationally well known for activity in the field of high energy spin physics.</p> <p>INFN-TO has specific roles in WP3 (TMDnet, M.Anselmino/F.Balestra), WP6 (SPHERE, A.Feliciello), WP7 (FAIRnet, D.Calvo), WP8 (ReteQuarkonii, E.Vercellin), WP17 (FPCC, D.Panzieri) and WP26 (ULISI, A.Rivetti).</p> <p>EC funds in WP3, WP6, WP8, WP17, WP26.</p>
	INFN Sezione di Trieste	INFN-TS	<p>The Trieste experimental groups have a very good reputation in nucleon-structure physics (COMPASS at CERN) and are involved in high-tech detectors construction.</p> <p>INFN-TS has specific roles in WP3 (TMDnet, F.Bradamante), WP7 (FAIRnet, M.Maggiore) and WP17 (FPCC, S. Dalla Torre).</p> <p>INFN-TS has the responsibility of WP17 (FPCC, S. Dalla Torre).</p> <p>EC funds in WP3, WP17.</p>
INFN Research Units interested in HadronPhysics2 but not receiving EC funds			
	INFN Gruppo collegato di Alessandria	INFN-AL	INFN-AL has specific roles in WP3 (TMDnet, V. Barone).
	INFN Sezione di Cagliari	INFN-CA	INFN-CA has specific roles in WP3 (TMDnet, F. Murgia) and WP8 (ReteQuarkonii, A. de Falco).
	INFN Sezione di Como	INFN-CO	INFN-CO has specific roles in WP3 (TMDnet, P. Ratcliffe).
	INFN Sezione di Cosenza	INFN-CS	INFN-CS has specific roles in WP22 (LatticeQCD, A. Papa).
	INFN Sezione di Firenze	INFN-FI	INFN-FI has specific roles in WP2 (TORIC, F. Becattini).
	INFN Laboratori Nazionali di Legnaro	INFN-LNL	INFN-LNL has specific roles in WP8 (ReteQuarkonii, A. Dainese).
	INFN Sezione di Milano	INFN-MI	INFN-MI has specific roles in WP15 (CARAT, A. Pullia).
	INFN Sezione di Milano Bicocca –	INFN-MIB	INFN-MIB has specific roles in WP22 (LatticeQCD, F. Di Renzo).

	<i>Gruppo Collegato di Parma</i>		
	<i>INFN Sezione di Napoli</i>	<i>INFN-NA</i>	<i>INFN-NA has specific roles in WP5 (PrimeNet, F. Ambrosino).</i>
	<i>INFN Sezione di Roma 1</i>	<i>INFN-RM1</i>	<i>INFN-RM1 has specific roles in WP5 (PrimeNet, G. De Zorzi).</i>
	<i>INFN Sezione di Roma 1 – Gruppo collegato Istituto Superiore di Sanità</i>	<i>INFN-ISS</i>	<i>INFN-ISS has specific roles in WP23 (HardEx, S. Frullani).</i>
	<i>INFN Sezione di Roma 2</i>	<i>INFN-RM2</i>	<i>INFN-RM2 has specific roles in WP5 (PrimeNet, R. Messi), WP15 (CARAT, G. Verona-Rinati) and WP22 (LatticeQCD, R. Frezzotti).</i>
	<i>INFN Sezione di Roma 3</i>	<i>INFN-RM3</i>	<i>INFN-RM3 has specific roles in WP5 (PrimeNet, A. Passeri) and WP22 (LatticeQCD, S. Simula).</i>
2	Oesterreichische Akademie der Wissenschaften	OeAW	<p>The Stefan Meyer Institute (SMI) of the Austrian Academy of Sciences has a long standing experience in building and running detectors for hadron physics experiments. SMI is involved in the development of novel APD detectors for Cherenkov counters and of Silicon Drift Detectors for precision spectroscopy. The Institute operates a mechanical and electronic workshop, specialized to the design and construction of detectors and target systems for nuclear physics experiments at accelerator laboratories like CERN/AD and PSI (Switzerland), LNF-INFN (Italy), TRIUMF (Canada) and KEK (Japan).</p> <p>SMI has specific roles in WP7 (FAIRnet, J.Marton), WP9 (LEANNIS, J.Marton), WP19 (FutureJet, J.Zmeskal), WP24 (JointGEM, J.Zmeskal) and WP28 (SiPM, J.Marton).</p> <p>SMI has the responsibility of WP9 (LEANNIS, J.Marton) and WP24 (JointGEM, J.Zmeskal).</p> <p>EC funds in WP9, WP19, WP24, WP28.</p>
3	Karl-Franzens Universität Graz	UNIGRAZ	<p>The University of Graz is very active in theoretical hadronic physics and has a very experienced staff. The investigations cluster around the structure of baryons employing QCD correlation functions. For these calculations, they operate a Linux-cluster with 200 CPU's and have access to the 40 TFlop/s Altix computer at the Leibniz Rechenzentrum in Munich.</p> <p>UNIGRAZ has specific roles in WP4 (QCDnet, R.Alkofer) and WP22 (LatticeQCD, C.Lang).</p>

			EC funds in WP22.
4	Univerzita Karlova v Praze	CUNI	<p>CUNI has high-level expertise in calorimetry based on scintillation detectors, on TOF and semiconductor detectors. The available infrastructure includes a semiconductor detector laboratory with clean rooms (class 10000). Groups from CUNI participate in COMPASS, ALICE and CBM. One group is specialized on pulsed NMR technologies.</p> <p>CUNI has specific roles in WP7 (FAIRnet, V.Petracek), WP16 (SPINMAP, H.Stepankowa) and WP28 (SiPM, R.Leitner).</p> <p>EC funds in WP16, WP28.</p>
5	Technicka Univerzita v Liberci	TUL	<p>The Technicka Univerzita v Liberci (Prague) consists of six faculties and joins forms of technical and university education. It has one experimental group, which is targeted in detector design and construction and solves optical problems concerning detectors. TUL is working on the RICH-1 detector at COMPASS. It has had responsibility concerning the optical parts of the RICH-1 upgrade and is thus experienced in RICH technology. Together with INFN-Trieste, the group will play an essential role in the construction and validation of the detector prototype. TUL has a specific role in WP17 (FPCC, M.Sulc).</p> <p>EC funds in WP17.</p>
6	Stiftung Deutsches Elektronen Synchrotron	DESY	<p>DESY is one of the world leading centres for particle physics and accelerator research. DESY conducts basic research in the natural sciences with special emphasis upon accelerators, particle physics and research with photons. The theory group has a long standing expertise in Lattice QCD calculations covering topics like chiral dynamics, hadron spectrum, hadron structure, heavy quark physics, QCD vacuum, CP violation, bulk thermodynamics. The activities include hardware design, the development of machine and application software.</p> <p>DESY plays specific roles in WP3 (TMDnet, W.D. Nowak), WP15 (CARAT, W. Lohmann), WP22 (LatticeQCD, G. Schierholz), and WP23 (HardEx, W.D. Nowak).+</p>

			<p>DESY has the responsibility of WP22 (LatticeQCD, G. Schierholz).</p> <p>EC funds in WP22.</p>
7	Forschungszentrum Jülich GmbH	FZJ	<p>The Forschungszentrum Jülich (FZJ) is one of the largest national research institutions in Germany. FZJ embeds the Institute for Nuclear Physics (IKP), which operates the cooler synchrotron and storage ring COSY. For the FAIR project it manages the antiproton part and is responsible for the construction of the HESR ring.</p> <p>FZJ has specific roles in WP4 (QCDnet), WP5 (PrimeNet), WP7 (FAIRnet), WP9 (LEANNIS), WP13 (COSY), WP16 (SPINMAP), WP19 (FutureJet), WP20 (DIRCs), WP25 (PolAntiP) and WP26 (ULISI).</p> <p>FZJ has the responsibility of WP13 (COSY) and WP25 (PolAntiP).</p> <p>EC funds in WP4, WP5, WP13, WP16, WP19, WP20, WP25.</p>
	<i>Forschungszentrum Jülich</i>	<i>FZJ</i>	<p><i>FZJ has specific roles in WP4 (QCDnet, E. Epelbaum), WP5 (PrimeNet, D. Grzonka), WP7 (FAIRnet, F. Hüggling), WP9 (LEANNIS, A. Gillitzer), WP16 (SPINMAP, A. Raccanelli), WP19 (FutureJet, M. Büscher), WP25 (PolAntiP, F. Rathmann) and WP26 (ULISI, F. Hüggling).</i></p> <p><i>FZJ has the responsibility of WP25 (PolAntiP, F. Rathmann).</i></p> <p><i>EC funds in WP4, WP5, WP16, WP19, WP20, WP25.</i></p>
	<i>Cooler Synchrotron</i>	<i>FZJ-COSY</i>	<p><i>The team of COSY will play a dominant role in the design and construction of the HESR ring at FAIR.</i></p> <p><i>FZJ-COSY has specific roles in WP13 (COSY, D. Grzonka) and WP20 (DIRCs, H. Machner).</i></p> <p><i>FZJ has the responsibility of WP13 (COSY, D. Grzonka).</i></p> <p><i>EC funds in WP13.</i></p>

8	Forschungszentrum Dresden-Rossendorf e.V.	FZD	<p>The Forschungszentrum Dresden-Rossendorf is a member of the Leibniz Association and is engaged in basic and application-oriented research. The hadron physics group is located at the Institute of Radiation Physics where the Rossendorf Radiation Source ELBE plays a central role for research. Projects aim towards understanding masses and interactions of hadrons as well as astrophysically relevant aspects of strongly interacting matter. Experimental work, accompanied by the institute's theory group, concentrates on the HADES research project. The institute runs an excellent detector laboratory which is involved in preparatory work and technical developments for hadron experiments at the future FAIR facility at GSI/Darmstadt. FZD has specific roles in WP2 (TORIC, B. Kämpfer), WP7 (FAIRnet, R. Kotte/K.T. Brinkmann) and WP18 (Future Gas, R. Kotte).</p> <p>EC funds in WP18.</p>
9	Gesellschaft für Schwerionenforschung mbH	GSI	<p>GSI is the world leading center for nuclear research. It operates several accelerators for heavy ions and protons and about twenty experimental areas. Adjacent to GSI a new European accelerator facility (FAIR) is under construction providing a world unique antiproton beam and intense ion beams. Large scale detectors were developed and constructed at GSI as contributions to the ALICE experiment at LHC.</p> <p>Groups of GSI have specific roles in WP2 (TORIC, J. Wambach), WP4 (QCDnet, M. Lutz), WP6 (SPHERE, T. Saito), WP7 (FAIRnet, P. Senger/K. Peters), WP8 (Rete Quarkonii, P. Braun-Munzinger), WP12 (GSI, D. Gross), WP15 (CARAT, E. Berdermann), WP18 (FutureGas, A. Andronic), WP19 (FutureJet, H. Orth), WP20 (DIRCs, C. Schwarz), WP22 (LatticeQCD, J. Wambach), WP23 (HardEx, F. Maas), WP24 (JointGEM, B. Voss/C.J. Schmidt) , WP25 (PolAntiP, F. Maas), WP26 (ULISI, J. Heuser) and WP28 (SiPM, H. Orth).</p> <p>GSI has the responsibilities of WP12 (GSI, D. Gross), WP15 (CARAT, E. Berdermann), WP26 (ULISI, J. Heuser) and WP28 (SiPM, H. Orth).</p> <p>EC funds in WP2, WP7, WP8, WP12, WP15, WP18, WP19, WP20, WP23, WP24, WP25,</p>

			WP26, WP28.
10	Technische Universität München	TUM	<p>The TUM group has a broad experience in building and operating high-precision tracking detectors based on Silicon and GEM technology. The large-size triple GEM detectors developed and built for COMPASS by the TUM group in cooperation with CERN are the first large-size GEM detectors used in a high-rate particle physics experiment. The development of fast readout electronics is another key competence of the group. The TUM group is also involved in the design and simulation of the PANDA detector. The theory group T39 at TUM has a long-standing expertise in developments and applications of Chiral Effective Field Theory (chiral perturbation theory, chiral SU (3) dynamics), with special focus on antikaon-nucleon and – nuclear systems in close communication with experiments.</p> <p>TUM has a specific role in WP4 (QCDnet, N. Kaiser), WP7 (FAIRnet, B. Ketzer), WP9 (LEANNIS, W. Weise/ L. Fabbietti), WP22 (LatticeQCD, P. Hägler) and WP24 (JointGEM, B. Ketzer).</p> <p>EC funds in WP9, WP24.</p>
11	Universität Augsburg	UA	<p>The Physics Department of the University of Augsburg consists of eight experimental and three theoretical chairs. The main focus is on Solid State Physics. At the Lehrstuhl fuer Experimentalphysik IV, the topics are synthesis and characterization of thin films. It plays the most important role in WP15, providing the diamond material, which is the base of the whole project. For the sample characterization a tandem accelerator, a wide range of microscopic techniques, μ-Raman spectroscopy and different X-ray diffraction setups are available. The University has a specific role in WP15 (CARAT, M. Schreck).</p> <p>EC funds in WP15.</p>
12	Universität Bielefeld	UNIBI	<p>The members of the theory groups at UNIBI are among the world leading experts in the fields of astroparticle physics and cosmology, finite temperature field theory, hard QCD processes in heavy ion collisions, and Lattice QCD. The Lattice QCD activities are focused on bulk thermodynamics, in-medium modifications, and fundamental questions.</p>

			<p>UNIBI has specific roles in WP22 (LatticeQCD, E. Laermann).</p> <p>EC funds in WP22.</p>
13	Ruhr-Universität Bochum	RUB	<p>The Ruhr-University Bochum has two experimental and two theoretical groups, exclusively working in hadronic physics. The antiproton project at FAIR was initiated from here. The expertise of the theory group on the analysis, modeling and theoretical study of partonic distributions is internationally well known.</p> <p>RUB is the world leader in design and construction of polarized solid state targets and is involved in experiments at CERN, MAMI and ELSA. It is also involved in the construction of 4π electromagnetic calorimeters at CERN, ELSA (Crystal Barrel) and at SLAC (Babar). It is now preparing the calorimeter for PANDA at FAIR.</p> <p>RUB has specific roles in WP3 (TMDnet, K. Goetze), WP4 (QCDnet, K. Goetze), WP5 (PrimeNet, U. Wiedner), WP7 (FAIRnet, U. Wiedner), WP16 (SPINMAP, W. Meyer), WP21 (SciFi, U. Wiedner), and WP23 (HardEx, K. Goetze).</p> <p>RUB has the responsibility of WP16 (SPINMAP, W. Meyer).</p> <p>EC funds in WP3, WP16, WP21, WP23.</p>
14	Rheinische Friedrich-Wilhelms-Universität	UBO	<p>The University of Bonn operates the Electron Stretcher Accelerator facility (ELSA) which provides polarized and unpolarized beams up to an energy of 3.5 GeV. ELSA offers two beam areas which are equipped with photon tagging systems. The major experimental device is the combination of the Crystal Barrel detector and the TAPS detector. The groups at ELSA have a long experience in the development and operation of complex detector systems.</p> <p>UBO has specific roles in WP4 (QCDnet, U.-G. Meissner), WP5 (PrimeNet, R. Beck), WP9 (LEANNIS, U.-G. Meissner), WP16 (SPINMAP, H. Dutz), WP21 (SciFI, U. Thoma), WP23 (HardEx, F. Klein) and WP28 (SiPM, U. Thoma).</p> <p>UBO has the responsibility of WP4 (QCDnet, U.-G. Meissner).</p>

			EC funds in WP4, WP5, WP9, WP16, WP21, WP23, WP28.
15	Friedrich-Alexander Universität Erlangen-Nürnberg	FAU	<p>FAU has two experimental groups devoted exclusively to experimental hadron physics. One of these groups plays the leading role in the HERMES experiment at HERA/DESY, the other has made many significant contributions to various hadronic experiments at CERN, COSY, PSI, and has started to collaborate in PANDA/FAIR. The groups have more than fifty years of experience in spin physics, including polarized beams and targets, and have a leading role in all kind of applications of photon detectors.</p> <p>FAU has specific roles in WP3 (TMDnet, K. Rith), WP7 (FAIRnet, A. Lehmann), WP20 (DIRCs, W. Eyrich/ A. Lehmann), WP23 (HardEx, E. Steffens), WP25 (PolAntiP, E. Steffens) and WP28 (SiPM, A. Lehmann).</p> <p>EC funds in WP3, WP20, WP25, WP28.</p>
16	Johann Wolfgang Goethe-Universität Frankfurt am Main	GUF	<p>The Institute of Nuclear Physics (IKP) of the University of Frankfurt has a longstanding tradition in research on the structure and dynamics of atomic and sub-atomic matter. Several research groups are deeply involved in the design, construction and operation of experiments at in-house laser and accelerator facilities, and at international research facilities, in particular at GSI and at CERN. The theory group at GUF is one of the world leading teams in microscopic transport theory and simulations of heavy ion collisions.</p> <p>GUF has specific roles in WP2 (TORIC, C. Greiner), WP7 (FAIRnet, J. Stroth), WP19 (FutureJet, R. Grisenti) and WP26 (ULISI, J. Stroth) .</p> <p>EC funds in WP2, WP19, WP26.</p>
17	Albert-Ludwigs-Universität Freiburg	ALU-FR	<p>The University of Freiburg has a long tradition in experimental hadronic physics. It plays a very important role in the COMPASS experiment, where polarized nucleon structure functions are measured. In the high-tech electronics laboratory fast front-end electronics has been successfully developed for the COMPASS experiment.</p> <p>ALU-FR has a specific role in WP17 (FPCC, H. Fischer) and WP23 (HardEx, H. Fischer).</p>

			EC funds in WP17, WP23.
18	Justus Liebig Universität Giessen	JLU	<p>The Giessen theory group has leading expertise in microscopic transport theory and simulations of heavy ion collisions. Moreover, there is a longstanding experience in nuclear quantum field theoretical calculations of strongly interacting many-body systems based on the Dirac-Brueckner theory and the reaction theory of strangeness production on the nucleon and nuclei. The Giessen experimental group is very experienced in crystal calorimetry. It has been the leading institution in building the TAPS detector. The group plays a leading role in the development of the PWO calorimeter of the PANDA experiment at FAIR.</p> <p>JLU has specific roles in WP2 (TORIC, W. Cassing), WP4 (QCDnet, U. Mosel), WP5 (PrimeNet, V. Shklyar), WP6 (SPHERE, H. Lenske), WP7 (FAIRnet, S. Lange), WP20 (DIRCS, M. Düren), WP21 (SciFi, R. Novotny), WP23 (HardEx, M. Düren) and WP28 (SiPM, R. Novotny).</p> <p>JLU has the responsibility of WP21 (SciFi, R. Novotny)</p> <p>EC funds in WP20, WP21, WP23, WP28.</p>
19	Ruprecht-Karls-Universität Heidelberg	UHEI	<p>The Particle Physics Division of the University of Heidelberg belongs to the most essential German institutions working in particle and nuclear physics. It plays a leading role in the construction of ALICE at CERN, operates FOPI at GSI and is involved in the design of CBM at FAIR. Its theoretical groups are involved in heavy ion reactions and in-media phenomena. UHEI has specific roles in WP7 (FAIRnet, N. Herrmann/V. Lindenstruth), WP8 (ReteQuarkonii, R. Schicker/J. Stachel), WP9 (LEANNIS, N. Herrmann), WP15 (CARAT, A. Pucci) and WP18 (FutureGas, J. Stachel).</p> <p>EC funds in WP8, WP18.</p>
20	Johannes Gutenberg Universität Mainz	UMainz	The Institute of Nuclear Physics at the University Mainz is running the high intensity, continuous-beam electron accelerator MAMI. The central physics topic of MAMI is the

			<p>investigation of strongly interacting systems with the electroweak probe. After a recent upgrade, this facility has now started operation at the energy of 1500 MeV, thus opening the door to studies with open strangeness. MAMI serves three major experimental facilities. These experimental groups are strongly supported by theory groups working on effective field theories and lattice gauge field theory.</p> <p>UMainz has specific roles in WP4 (QCDnet), WP5 (PrimeNet), WP6 (SPHERE,), WP7 (FAIRnet), WP11 (MAMI), WP16 (SPINMAP), WP21 (SciFI), WP23 (HardEx) and WP25 (PolAntiP).</p> <p>UMainz has the responsibility of WP6 (SPHERE) and WP11 (MAMI).</p> <p>EC funds in WP4, WP5, WP6, WP11, WP16, WP21, WP23.</p>
	<i>Universität Mainz</i>	<i>UMainz</i>	<p><i>UMainz has specific roles in WP4 (QCDnet, M. Neubert), WP5 (PrimeNet, M. Ostrick), WP6 (SPHERE, J. Pochodzalla), WP7 (FAIRnet, P. Achenbach), WP16 (SPINMAP, A. Thomas), WP21 (SciFI, F. Maas), WP23 (HardEx, D. von Harrach) and WP25 (PolAntiP, K. Aulenbacher).</i></p> <p><i>UMainz has responsibility of WP6 (SPHERE, J. Pochodzalla).</i></p> <p><i>EC funds in WP4, WP5, WP6, WP16, WP21, WP23.</i></p>
	<i>Mainz Microtron-MAMI</i>	<i>MAMI</i>	<p><i>MAMI has specific roles in WP11 (MAMI, H.-J. Arends).</i></p> <p><i>MAMI has the responsibility of WP11 (MAMI, H.-J. Arends).</i></p> <p><i>EC funds in WP11.</i></p>
21	Westfälische Wilhelms-Universität Münster	WWU	<p>The Physics Department of the University of Muenster has a long tradition in experimental hadronic physics. Two of the groups played leading roles in heavy ions experiments at RHIC and in the investigation of medium energy reactions at COSY. The projects will profit from the</p>

			<p>wide experiences of the groups as far as fast electronics and gaseous jet-targets are concerned. Both developments will have a deep impact on the PANDA and CBM experiments at FAIR. The WWU groups have specific roles in WP5 (PrimeNet, A. Khoukaz), WP7 (FAIRnet, J. Wessels/A. Khoukaz), WP18 (FutureGas, J. Wessels), WP19 (FutureJet, A. Khoukaz) and WP22 (LatticeQCD, O. Philipsen).</p> <p>WWU has the responsibility of WP18 (FutureGas, J. Wessels) and WP19 (FutureJet, A. Khoukaz).</p> <p>EC funds in WP7, WP18, WP19.</p>
22	Universität Regensburg	UREG	<p>The UREG theory group has a long standing expertise in Quantum Chromo Dynamics, Lattice QCD, and hadron physics. The activities include hardware design, the development of machine and application software.</p> <p>UREG has specific roles in WP22 (LatticeQCD, G. Bali) and WP23 (HardEx, A. Schaefer).</p> <p>EC funds in WP23.</p>
23	Bergische Universität Wuppertal	BUW	<p>The Bergische Universitaet of Wuppertal has a strong group in theoretical particle physics, in particular a long tradition in Lattice QCD. The research is focused mostly on QCD thermodynamics at vanishing and non-vanishing chemical potentials, but spectroscopy is also an active field. The Joint Research Activity in which BUW is involved will profit from the ample experience of the members of the BUW group, which had a large number of highly cited papers in the past.</p> <p>BUW has specific roles in WP22 (LatticeQCD, Z. Fodor).</p> <p>EC funds in WP22.</p>
24	Universitat de Barcelona	UB	<p>The University of Barcelona has a large Physics Faculty consisting of five departments. The group of the <i>Departament d'Estructura i Constituents de la Materia</i> has large experience in various aspects of hadronic interactions in different environments (vacuum, nuclear matter, hot</p>

			<p>medium). Within the different networks the work of the group will cover weak decays of hypernuclei and the behaviour of strange and charm mesons in nuclear systems.</p> <p>UB has specific roles in WP2 (TORIC, C. Manuel), WP4 (QCDnet, A. Ramos), WP5 (PrimeNet, R. Escribano) and WP6 (SPHERE, A. Ramos).</p> <p>EC funds in WP6.</p>
25	Universidade de Santiago de Compostela	USC	<p>The team of the University of Santiago de Compostela has experience both in the development of detectors for Nuclear Physics experiments and in the research and manufacturing of new ceramics materials in the Ceramics Institute of the University. The theory group of the Department of Particle Physics of the University of Santiago de Compostela is one of the Spanish research centres of highest level in the field of phenomenology of Particle Physics. The group has expertise in the development of dynamical models for the study of jet reconstruction in heavy ion collisions and nuclear parton distribution functions.</p> <p>USC has specific roles in WP8 (ReteQuarkonii, E.G. Ferreiro), WP18 (FutureGas, J. Garzón) and WP27 (JETCAL, E.G. Ferreiro).</p> <p>EC funds in WP18, WP27.</p>
26	Universitat de Valencia, Estudi General	UVEG	<p>The University of Valencia has a large Physics Department. The theoretical group of the Instituto de Fisica Corpuscular is very well known in hadronic physics and has large experience in the study of mesonic and baryonic resonances with open charm and hidden charm. Chiral lagrangians and chiral techniques will be applied in the studies foreseen for Hadronphysics2.</p> <p>UVEG has specific roles in WP4 (QCDnet, E. Oset), WP5 (PrimeNet, E. Oset), WP6 (SPHERE, E. Oset), WP7 (FAIRnet, J. Diaz), WP22 (LatticeQCD, V. Gimenez), and WP23 (HardEx, S. Noguera).</p> <p>EC funds in WP4, WP23.</p>
27	Helsingin yliopisto	UH	<p>The Helsinki Institute of Physics (HIP) is a physics research institute with activities covering an extensive range of subjects in theoretical physics and experimental subatomic physics. The</p>

			<p>institute is jointly operated by several universities in Finland and responsible for the Finnish contributions to many worldwide collaborations. HIP participates in software and hardware aspects of the CERN CMS, ALICE, TOTEM and ISOLDE facilities, and coordinates Finnish participation in the FAIR project.</p> <p>UH has specific roles in WP2 (TORIC, E.J. Eskola), WP4 (QCDnet, M. Sainio), WP7 (FAIRnet, F. Garcia), WP8 (ReteQuarkonii, R. Orava), WP9 (LEANNIS, A.M. Green) and WP24 (JointGEM, F. Garcia).</p> <p>EC funds in WP2, WP24.</p>
28	Commissariat à l'Énergie Atomique	CEA	<p>CEA is a public research organisation established for research, development and innovation in the field of energy, information, health, technologies and fundamental research. It is a prominent player in the European Research Area and is involved in setting up collaboration projects with many partners around the world.</p> <p>CEA has specific roles in WP8 (ReteQuarkonii) and WP23 (HardEx).</p> <p>EC funds in WP23.</p>
	<i>CEA-Institut de Recherches sur les lois Fondamentales de l'Univers</i>	<i>CEA-IRFU</i>	<p><i>The IRFU (Institut de Recherches sur les lois Fondamentales de l'Univers, formerly known as DAPNIA) is responsible for experimental and theoretical research in hadron, particle and nuclear physics, astrophysics, and instrumentation. IRFU plays a leading role in hadronic physics with teams carrying research at CERN (COMPASS and ALICE) and Jefferson Lab (CLAS and CLAS12). The IRFU groups have a large technical potential for innovative R&D in detector technology (Micromegas, calorimetry, etc), in electronics and in computing. CEA-IRFU has specific roles in WP8 (ReteQuarkonii, H. Borel) and WP23 (HardEx, N. d'Hose).</i></p> <p><i>EC funds in WP23.</i></p>
CEA Research Units interested in HadronPhysics2 but not receiving EC funds			
	<i>CEA – Institut de Physique Théorique</i>	<i>CEA/IPhT</i>	<i>CEA/IPhT has specific roles in WP2 (TORIC).</i>

	<i>CEA - Direction de la Recherche Technologique</i>	<i>CEA/DRT</i>	<i>CEA/DRT has specific roles in WP15 (CARAT).</i>
29	Centre National de la Recherche Scientifique	CNRS	<p>CNRS is a public research organisation under the administrative supervision of French Ministry for Research, and the largest research organisation in Europe. The CNRS runs research units as well as jointly administered units “JRUs” (1400 in total) with the universities or with other research organisations located throughout France and some of them abroad. It covers all scientific fields (from high energy and nuclear physics to social sciences). Within the CNRS, the institute IN2P3 (Institut National de Physique Nucléaire et Physique des Particules) is responsible for research in Particle Physics, Nuclear Physics and Astroparticle Physics (19 laboratories). The participating IN2P3 institutions are involved in the most important international collaborations in the domain of hadron physics.</p> <p>CNRS has specific roles in WP2 (TORIC), WP8 (ReteQuarkonii), WP21 (SciFi), WP22 (LatticeQCD), WP23 (HardEx), WP26 (ULISI) and WP27 (JETCAL).</p> <p>CNRS/IN2P3 has the responsibility of WP2 (TORIC) and WP8 (ReteQuarkonii).</p> <p>EC funds in WP2, WP8, WP21, WP22, WP23, WP26, WP27.</p> <p>The participations where CNRS has specific roles are reported below. The names of researchers only aim at identifying the concerned team inside the research units at the time of the Grant Agreement signature, though the physical persons that are active on HadronPhysics2 in those teams may change over the project duration.</p>
	<i>CNRS/IN2P3 Laboratoire de physique subatomique et des technologies associées, Nantes (UMR6457)</i>	<i>CNRS/IN2P3 /SUBATECH</i>	<p><i>The laboratory is specialized in good part in the physics of strong interacting matter in ultra-relativistic heavy ions collisions, both in theory and experiment.</i></p> <p><i>CNRS/IN2P3/SUBATECH has specific roles in WP2 (TORIC, J. Aichelin), WP8 (ReteQuarkonii, G. Martinez/P.-B. Gossiaux) and WP27 (JETCAL, C. Roy).</i></p> <p><i>CNRS/IN2P3/SUBATECH has the responsibility of WP2 (TORIC, J. Aichelin) and WP8</i></p>

			<i>(ReteQuarkonii, G. Martinez).</i> <i>EC funds in WP2, WP8, WP27.</i>
	<i>CNRS Laboratoire de physico-chimie des matériaux luminescents, Lyon (UMR5620)</i>	<i>CNRS/LPCML</i>	<i>The laboratory carries research on laser materials, scintillating materials, light guides, glasses and nanostructures.</i> <i>CNRS/LPCML has specific roles in WP21 (SciFi, C. Dujardin).</i> <i>EC funds in WP21.</i>
	<i>CNRS/IN2P3 Institut de physique nucléaire d'Orsay (UMR8608)</i>	<i>CNRS/IN2P3 /IPNO</i>	<i>A significant part of the institute is devoted to hadronic physics, ranging from hadron structure (JLAB, GSI, PANDA) to Quark-Gluon Plasma (ALICE). There is a strong activity in detector design and construction.</i> <i>CNRS/IN2P3/IPNO has specific roles in WP23 (HardEx, M. Guidal). It may also contribute to WP4 (QCDnet, B. Moussallam) and to WP8 (ReteQuarkonii, B. Espagnon/C. Suire).</i> <i>EC Funds WP23.</i>
	<i>CNRS Laboratoire de physique théorique d'Orsay (UMR8627)</i>	<i>CNRS/LPT-Orsay</i>	<i>Members of the theoretical physics laboratory are experts in various aspects of physics of hadrons: in numerical Lattice QCD simulations, effective theories of QCD and in numerous phenomenological applications related to flavour physics and CP-violation.</i> <i>CNRS/LPT-Orsay has specific roles in WP22 (LatticeQCD, D. Becirevic).</i> <i>EC Funds WP22.</i>
	<i>CNRS/IN2P3 Laboratoire de physique subatomique et de cosmologie, Grenoble (UMR5821)</i>	<i>CNRS/IN2P3 /LPSC</i>	<i>The laboratory takes advantage of strong expertise in detector design and simulations to participate significantly in physics at ALICE and at JLAB.</i> <i>CNRS/IN2P3/LPSC has specific roles in WP23 (HardEx, E. Voutier) and WP27 (JETCAL, C. Furget).</i> <i>EC funds in WP23, WP27.</i>
	<i>CNRS/IN2P3 Institut</i>	<i>CNRS/IN2P3</i>	<i>The institute builds on an expertise gathered in high-energy particle physics experiments to</i>

	<i>pluridisciplinaire Hubert Curien, Strasbourg (UMR7178)</i>	<i>/IPHC</i>	<i>design and build the most challenging silicon vertex trackers. CNRS/IN2P3/IPHC has specific roles in WP26 (ULISI, M. Winter). It may also participate in WP7 (FAIRnet, F. Rami) and WP27 (JETCAL, C. Kuhn). EC funds in WP26.</i>
	<i>CNRS Centre de physique théorique, Palaiseau (UMR7644)</i>	<i>CNRS/CPHT</i>	<i>The theoreticians at CPHT are specialized in various aspects of QCD, ranging from nucleon structure (GPD's, TMD's) to Quark-Gluon Plasma. CNRS/CPHT has specific roles in WP23 (HardEX, B. Pire). EC funds in WP23.</i>
<p>CNRS Research Units interested in HadronPhysics2 but not receiving EC funds. The CNRS Research Units listed below may contribute to the mentioned WPs. Since they receive no EC funding, they are not expected to report neither possible costs nor their possible effort to the Project.</p>			
	<i>CNRS Laboratoire d'Annecy-le-Vieux de physique théorique (UMR5108)</i>	<i>CNRS/LAPTH</i>	<i>CNRS/LAPTH may contribute to WP2 (TORIC, P. Aurenche) and to WP8 (ReteQuarkonii, F. Alreo).</i>
	<i>CNRS/IN2P3 Institut de Physique Nucléaire de Lyon (UMR5822)</i>	<i>CNRS/IN2P3 /IPNL</i>	<i>CNRS/IN2P3/IPNL may contribute to WP2 (TORIC, G. Chanfray) and WP8 (ReteQuarkonii, J-Y. Grossiord).</i>
	<i>CNRS Centre de Physique Théorique de Marseille (UMR6207)</i>	<i>CNRS/CPT-Marseille</i>	<i>CNRS/CPT-Marseille may contribute to WP4 (QCDnet, team of M. Knecht) and WP22 (LatticeQCD, L. Lelouch).</i>
	<i>CNRS/ IN2P3 Laboratoire de physique corpusculaire, Clermont Ferrand (UMR6533)</i>	<i>CNRS/IN2P3 /LPC-Clermont</i>	<i>CNRS/IN2P3/LPC-Clermont may contribute to WP8 (ReteQuarkonii, P. Crochet) and WP23 (HardEx, C. Hyde-Wright).</i>
	<i>CNRS/IN2P3 Laboratoire Leprince-Ringuet (UMR7638)</i>	<i>CNRS/IN2P3 /LLR</i>	<i>CNRS/IN2P3/LLR may contribute to WP8 (ReteQuarkonii, R. Granier de Cassagnac).</i>
30	FIBERCRYST S.A.S.	FIBERCRYST	FiberCryst is a company dedicated to the growth of crystalline fibres either for R&D or at the

			<p>industrial scale using the micro-pulling down technique. The company is a spin off of LPCML (Lab. de Physico-Chimie des Materiaux Luminiscents), which is operated by the University of Lyon and CNRS. FiberCryst and LPCML are in close connection in order to optimize the materials for different applications. FiberCryst is one of the main suppliers for the inorganic fiber material.</p> <p>FiberCryst has a specific role in WP21 (SciFi, F. Garcia).</p> <p>EC funds in WP21.</p>
31	Institut Ruđer Bošković	RBI	<p>The heavy ions research laboratory of RBI is collaborating with various groups at GSI, KVI, LNL, and LNS. The RBI group is involved in R&D and construction of modern time-of-flight detectors within the FOPI/GSI and CBM/FAIR collaborations. The group has acquired expertise in mechanical and electrical design of RPC counters and in large scale production procedures.</p> <p>RBI has specific roles in WP5 (PrimeNet, A. Svarc), WP7 (FAIRnet, R. Caplar), and WP16 (SPINMAP, I. Supek).</p> <p>EC funds in WP16.</p>
32	MTA KFKI Reszecske es Magfizikai Kutatointezet	KFKI RMKI	<p>KFKI RMKI is the leading Research Institute for Particle and Nuclear Physics in Hungary. The theory group is very experienced in the development of models to simulate the dynamics and the observables of heavy ion reactions. The experimental group has a long lasting experience in the preparation and the data analysis of accelerator experiments.</p> <p>KFKI has specific roles in WP2 (TORIC, T. Biro) and WP7 (FAIRnet, G. Vesztergombi).</p> <p>EC funds in WP2.</p>
33	Foundation Bruno Kessler	FBK	<p>FBK, formally runs several scientific institutions in the area of Trento, among them the European Centre for Theoretical Studies in Nuclear Physics and Related Areas (ECT*) and a Centre for Scientific and Technological Research (FBK-irst).</p> <p>FBK has specific roles in WP3 (TMDnet), WP10 (ECT*), WP22 (LatticeQCD) and WP28</p>

			<p>(SiPM).</p> <p>FBK has specific responsibility in WP10 (ECT*).</p> <p>EC funds in WP3, WP10.</p>
	<i>European Centre for Theoretical Studies in Nuclear Physics and Related Areas</i>	<i>ECT*</i>	<p><i>ECT* provides a dedicated and structured combination of scientific activities for a large international scientific community. It promotes coordination of European research efforts in nuclear physics in a broad sense. The activities are workshops, collaboration meetings, a doctoral training programme and specialised courses. ECT* serves as trans-national access facility in Hadronphysics2.</i></p> <p><i>FBK-ECT* will host and partially support a postdoc position dedicated to the creation of a database for transverse momentum dependent partonic distributions.</i></p> <p><i>FBK-ECT* has specific roles in WP3 (TMDnet, A. Richter), WP10 (ECT*, A Richter) and WP22 (Lattice QCD, L. Scorzato).</i></p> <p><i>FBK-ECT* has the responsibility of WP10 (ECT*, A. Richeter).</i></p> <p><i>EC funds in WP10.</i></p>
FBK Research Units interested in HadronPhysics2 but not receiving EC funds.			
	<i>FBK-irst Centro per la ricerca scientifica e tecnologica</i>	<i>FBK-irst</i>	<p><i>FBK-irst is engaged in Information Technology, Microsystems and Physical Chemistry of Surfaces and Interfaces.</i></p> <p><i>FBK-irst has specific roles in WP28 (SiPM, C. Piemonte).</i></p>
34	Rijksuniversiteit Groningen	RuG	<p>The Groningen group participated in the construction and exploitation of the TAPS calorimeter array and is active in the design of a PWO calorimeter for PANDA at FAIR. The group has major experience in applications of scintillation detectors, photo sensors, light pulsed systems for monitoring crystals, developing FPGA electronics, and experience in charged-particle irradiations and operation of an irradiation facility.</p> <p>RuG has specific roles in WP7 (FAIRnet, J. Messchendorp) and WP21 (SciFi, H. Löhner).</p>

			EC funds in WP21.
35	Vrije Universiteit Amsterdam	VU	<p>The group of VU Amsterdam pioneered the physics of TMDs (both distribution and fragmentation functions). They have developed substantial parts of the theoretical framework of the TMDs within QCD, and contributed to the phenomenology of TMDs in lepton- and hadron-induced polarized reactions.</p> <p>VU has specific roles in WP3 (TMDnet, P. Mulders).</p> <p>EC funds in WP3.</p>
36	Universitetet i Bergen	UiB	<p>The Faculty of Mathematics and Natural Sciences of the University of Bergen has around 2700 students. Its particle and nuclear physics branch is mainly active in two forthcoming experiments at LHC: ATLAS and ALICE. The theoretical group is working since years in the field of relativistic heavy ion reactions and has a good reputation.</p> <p>UiB has specific roles in WP2 (TORIC, L. Csernai), WP7 (FAIRnet, D. Röhrich) and WP8 (ReteQuarkonii, J. Nystrand).</p> <p>EC funds in WP2.</p>
37	Jagiellonian University Cracow	UJ	<p>The Physics Department of the Cracow University is well known in Europe and has a very good reputation. Its experimental branch operates an excellent detector and electronic workshop, which were used in the past for the construction of numerous wire chambers together with the associated readout electronics for experiments at COSY and GSI. UJ is engaged in the construction of the detector system for the forward tracking at PANDA, in the development of the DAQ system as well as in the simulations of the detector performance.</p> <p>UJ has specific roles in WP4 (QCDnet, H. Witala), WP5 (PrimeNet, P. Moskal), WP7 (FAIRnet, Z. Majka/J. Smyrski), and WP28 (SiPMs, J. Smyrski).</p> <p>EC funds in WP7, WP28.</p>
38	The Andrzej Soltan Institute for	SINS	The SINS Warsaw group is involved in the PANDA experiment and contributes to the

	Nuclear Studies		<p>development of the PWO calorimeter by performing scintillator response studies with low energy protons and gamma rays. This activity includes performance simulations and feasibility studies. The theory group of SINS has a long-standing expertise in calculations of KNN, KNNN and KNNNN clusters by a variational method involving S-wave (Λ) and P-wave (Σ) interactions.</p> <p>The SINS group has specific roles in WP7 (FAIRnet, B. Zwieglinski), WP8 (ReteQuarkonii, L. Szymanowski), WP9 (LEANNIS, S. Wycech), WP23 (HardEx, J. Nassalski) and WP25 (PolAntiP, P. Zupransky).</p> <p>EC funds in WP23, WP25.</p>
39	University of Warsaw	UW	<p>The Institute for Experimental Physics of the University of Warsaw consists of ten research divisions. Physicists from the Division of Physics of Atomic Nuclei for many years perform their experiments in foreign laboratories and have a very good reputation. The experimental group has a large experience in the field of open-and hidden-strangeness production from their former engagement in the FOPI experiment at GSI.</p> <p>UW has specific roles in WP7 (FAIRnet, B. Slowinski/T. Matulewicz) and WP9 (LEANNIS, T. Matulewicz).</p> <p>EC funds in WP9.</p>
40	Institutul National de Cercetare-Dezvoltare pentru Fizica si Inginerie Nucleara – Horia Hulubei	IFIN-HH	<p>IFIN-HH is the leading R&D Romanian Institute in the field of Nuclear Physics, Nuclear Engineering, Particle Physics and related areas. It is involved in several outside activities at CERN, GSI, GANIL, DESY and the Forschungszentrum Karlsruhe. It runs a world-class detector laboratory involved in R&D activities for fast TRD and RPC's. A major part of the ALICE-TRD is built here. The group participating to HadronPhysics2 is specialized in Silicon-based detector systems (Charge-Coupled Devices, Silicon Drift Detectors) and slow controls. IFIN-HH has specific roles in WP7 (FAIRnet, M. Petrovici/D. Pantea), WP15 (CARAT, M. Petrovici), WP18 (FutureGas, M. Petrovici), WP24 (JointGEM, M. Bragadireanu) and WP28 (SiPM, M. Bragadireanu).</p>

			EC funds in WP7, WP15, WP18, WP24, WP28.
41	Stockholms universitet	SU	<p>The Stockholm University (Department of Nuclear Physics) has a major experience in operating detectors in high magnetic fields at the CELSIUS machine in Uppsala. It has a very good record of achievements in the WASA collaboration at TSL (Uppsala) and more recently at WASA-Jülich. The group will use its large experience in the field for the design of the electromagnetic calorimeter for the PANDA experiment at FAIR.</p> <p>SU has specific roles in WP5 (PrimeNet, P.-E. Tegner), WP7 (FAIRnet, P.-E. Tegner), and WP25 (PolAntiP, P. Thorngreen-Engblom).</p> <p>EC funds in WP25.</p>
42	Uppsala universitet	UU	<p>The Uppsala University operates the Svedberg Laboratory providing proton beams and a white neutron beam up to 180 MeV plus a unique mono-energetic neutron beam in the energy range 10-180 MeV. The Uppsala group has been very actively involved in experiments at CERN, Uppsala-TSL and Jülich. Their experience covers many aspects of calorimeters, including radiation damage studies, electronic signal digitization, readout systems and data analysis. UU is the main institution behind the WASA detector and the pellet target was originally developed here.</p> <p>UU has specific roles in WP5 (PrimeNet), WP7 (FAIRnet), WP8 (ReteQuarkonii), WP19 (FutureJet) and WP21 (SciFi).</p> <p>UU has the responsibility of WP5 (PrimeNet).</p> <p>EC funds in WP5, WP19, WP21.</p>
	<i>Uppsala universitet</i>	<i>UU</i>	<p><i>UU has specific roles in WP5 (PrimeNet, B. Höistad), WP7 (FAIRnet, T. Johansson), WP8 (ReteQuarkonii, G. Ingelman), WP19 (FutureJet, H. Calen) and WP21 (SciFi, T. Johansson).</i></p> <p><i>UU has the responsibility of WP5 (PrimeNet, B. Höistad).</i></p>

			<i>EC funds in WP5, WP19, WP21</i>
UU Research Units interested in HadronPhysics2 but not receiving EC funds.			
	<i>The Svedberg Laboratory</i>	<i>TSL</i>	<i>TSL has specific roles in WP7 (FAIRnet, C. Ekström).</i>
43	The University of Edinburgh	UEDIN	<p>The UEDIN group is experienced in the simulation and the design of Cherenkov Imaging detectors and in the development of optical systems for focusing and dispersion correction. The group has expertise in nucleon polarimetry, particle-identification systems, Si-strip detectors, G4 Monte Carlo modeling of detectors, photo- and electro-nuclear experimental techniques. The theory group is experienced in Lattice QCD calculations, in particular in the development of application software, algorithms.</p> <p>UEDIN has specific roles in WP20 (DIRCs, D. Branford/D. Watts) and WP22 (LatticeQCD, R. Horsley).</p> <p>EC funds in WP20, WP22.</p>
44	University of Glasgow	UGlasgow	<p>The University of Glasgow with its Experimental Nuclear Physics Group (NPE) and its Particle Physics Theory Group (PPT) plays a leading role in European hadron physics. The groups are engaged in a wide range of research studies to investigate the subatomic structure of matter. The present experimental work uses high precision electromagnetic probes (MAMI, JLAB, HERMES), but also preparations for the next generation of experiments are being pursued. The first-class theoretical studies cluster on the properties of hadrons (HPQCD-Collaboration). The work of both groups is of fundamental importance for the forthcoming projects in hadronic physics at FAIR and JLAB.</p> <p>UGlasgow has specific roles in WP7 (FAIRnet, G. Rosner), WP15 (CARAT, Val O'Shea), WP20 (DIRCs, B. Seitz), WP21 (SciFi, J.R.M. Annand), WP22 (LatticeQCD, C. McNeile), WP23 (HardEx, R. Kaiser) and WP24 (JointGEM, J. Annand).</p> <p>UGlasgow has the responsibility of WP20 (DIRCs, B. Seitz) and WP23 (HardEx, R. Kaiser).</p>

			EC funds in WP15, WP20, WP21, WP23, WP24.
45	University of Liverpool	ULiverpool	<p>The theoretical group from the University of Liverpool has expertise in Lattice QCD calculations, and works successfully on the hadron spectrum and the structure of hadrons. ULiverpool has a specific role in WP22 (LatticeQCD, P. Rakow).</p> <p>EC funds in WP22.</p>
46	Swansea University	Swansea	<p>The Swansea University, in particular the Department of Physics, has a good reputation in research. The Lattice QCD group operates very successfully a 128 Processor Computer (APEMille) dedicated to Lattice QCD calculations. It has significantly contributed to the variation of QCD predictions with temperature and pressure and thus to the properties of the Quark-Gluon Plasma. There is an intensive collaboration with the University of Bielefeld. The projects planned within the Joint Research Activity will be of relevance for future experiments at LHC (ALICE) and RHIC.</p> <p>The Swansea University has a specific role in WP22 (LatticeQCD, S. Hands).</p> <p>EC funds in WP22.</p>

Third parties linked to the CNRS*

Name of Beneficiary/Name of the Research Unit	Short name	UMR Number	Name of third party(ies) involved in UMR	Activity (ies) in which the third party linked to the Beneficiary is involved
Centre National de la Recherche Scientifique <i>CNRS/IN2P3 Laboratoire de physique subatomique et des technologies associées, Nantes</i>	CNRS <i>CNRS/IN2P3/SUBATECH</i>	<i>UMR6457</i>	<i>École Nationale Supérieure des Techniques Industrielles et des Mines de Nantes (ENSTIMN) and Université de Nantes</i>	<i>WP2</i>
<i>CNRS/IN2P3 Laboratoire de physique subatomique et de cosmologie, Grenoble</i>	<i>CNRS/IN2P3/LPSC</i>	<i>UMR5821</i>	<i>Université Joseph Fourier Grenoble 1 (UJF)</i>	<i>WP27</i>
<i>CNRS Laboratoire de physico-chimie des matériaux luminescents, Lyon</i>	<i>CNRS/LPCML</i>	<i>UMR5620</i>	<i>Université Claude Bernard Lyon 1</i>	<i>WP21</i>

* These Universities will be added to Special Clause 10 of the Grant Agreement.

Other Involved Institutions not receiving EC Funds

Number	Institution	Country code	Activity (ies) in which it is involved
1	Yerevan Physics Institute, Yerevan	AM	WP21
2	University of Innsbruck	AT	WP5
3	University of Technology, Vienna	AT	WP9, WP22
4	VERA Laboratory, Vienna	AT	WP15
5	University of Gent	BE	WP3
6	Université Catholique de Louvain	BE	WP8
7	Interuniversity Microelectronic Centre, Louvain	BE	WP26
8	Institute of Nuclear Research, Sofia	BG	WP3
9	Research Institute for Nuclear Problems, Minsk	BY	WP7
10	Basel University	CH	WP5, WP7
11	CERN	CH	WP8
12	ETH, Zürich	CH	WP22
13	Paul Scherrer Institut (PSI), Villigen	CH	WP28
14	University of Bern	CH	WP4, WP22
15	Zecotek Photonics, Zürich	CH	WP28
16	Central China Normal University, Wuhan - Hubei	CN	WP7
17	IMP, Lanzhou	CN	WP7
18	Institute of High Energy Physics (IHEP), Beijing	CN	WP7
19	University of Science & Technology of China (USTC), Hefei	CN	WP7
20	Cyprus University, Nikosia	CY	WP7, WP22
21	Nuclear Physics Institute, Rez/Prague	CZ	WP6
22	Eberhard Karls Universität, Tübingen	DE	WP4, WP7

23	Frankfurt Institute for Advanced Studies	DE	WP2, WP5
24	Fraunhofer Institute für Zuverlässigkeit und Mikrointegration, München	DE	WP26
25	Hasylab, Hamburg	DE	WP15
26	University of Berlin	DE	WP22
27	University of Darmstadt	DE	WP2
28	University of Duisburg-Essen	DE	WP5
29	University of Karlsruhe	DE	WP15
30	University of Hamburg, ITP	DE	WP8
31	University of Leipzig	DE	WP22
32	University of Mannheim	DE	WP7
33	Fraunhofer Institut für Angewandte Festkörperforschung, Freiburg	DE	WP15
34	Copenhagen University, Niels Bohr Institute	DK	WP8
35	University of Granada	ES	WP4, WP6
36	University of Madrid	ES	WP4
37	University of Murcia	ES	WP4
38	University of Salamanca	ES	WP4
39	Consejo Superior de Investigaciones Científicas	ES	WP2
40	University of Oulu	FI	WP22
41	University of Jyväskylä	FI	WP2
42	ESRF, Grenoble	FR	WP15
43	University of Split	HR	WP7
44	Eötvös University, Budapest	HU	WP22
45	National University of Maynooth	IE	WP22
46	Trinity College, Dublin	IE	WP3, WP22, WP25
47	University of Tel Aviv	IL	WP23
48	Hebrew University, Jerusalem	IL	WP6

49	Banaras Hindu University, Varanasi	IN	WP7
50	Institute of Physics, Bhubaneswar	IN	WP7
51	Indian Institute of Technology, Kharagpur	IN	WP7
52	Panjab University, Chandigarh	IN	WP7
53	Saha Institute of Nuclear Physics, Kolkata	IN	WP7
54	Variable Energy Cyclotron Centre (VECC), Kolkata	IN	WP7, WP24
55	Nara Women's University	JP	WP5
56	University of Kyoto	JP	WP5
57	University of Tokyo - RIKEN/Wakoshi	JP	WP9
58	Korea University, Seoul	KR	WP7
59	Pusan National University (PNU)	KR	WP7
60	University of Oslo	NO	WP2
61	Akademia Świętokrzyska, Kielce	PL	WP22
62	Copernicus Astronomical Center, Warszawa	PL	WP6
63	IPJ Lodz	PL	WP5
64	University of Science and Technology (AGH), Krakow	PL	WP7
65	INP, Krakow	PL	WP8
66	University of Silesia, Katowice	PL	WP7
67	University of Wroclaw	PL	WP2
68	IPJ Warsaw	PL	WP5
69	Instituto Superior Técnico, Lisbon	PT	WP4, WP5
70	University of Coimbra	PT	WP3, WP4
71	LIP, Coimbra	PT	WP7
72	BINP, Novosibirsk	RU	WP7
73	Budker Institute of Nuclear Physics, Akademgorodok	RU	WP5
74	Moscow State University	RU	WP7, WP8

75	Institute for High Energy Physics (IHEP), Protvino	RU	WP7, WP22, WP28
76	Institute for Nuclear Research (INR), Troitzk	RU	WP7, WP28
77	Institute for Theoretical and Experimental Physics (ITEP), Moscow	RU	WP4, WP5, WP7, WP8, WP19, WP22
78	JINR, Dubna	RU	WP7, WP28
79	Kurchatov Institute, Moscow	RU	WP7, WP15
80	Moscow Engineering Physics Institute (MEPhI)	RU	WP7
81	Moscow Power Engineering Institute (MPEI)	RU	WP19
82	St. Petersburg Nuclear Physics Institute (PNPI), Gatchina	RU	WP7, WP8, WP24, WP28
83	V.G. Khlopin Radium Institute, St. Petersburg	RU	WP7, WP19
84	St. Petersburg State Polytechnic University (SPb-SPU)	RU	WP7
85	University of Lund	SE	WP4, WP5, WP7
86	University of Ljubljana	SI	WP22
87	Univerzita Mateja Bela, Banska Bystrica	SK	WP2
88	Orta Doğu Teknik Üniversitesi, Ankara	TR	WP4
89	Institute for Nuclear Research, National Academy of Science of Ukraine, Kiev	UA	WP8
90	State Enterprise Scientific Research Technological Institute of Instrument Engineering, Kharkov	UA	WP26, WP28
91	University of Kiev	UA	WP7
92	London University College	UK	WP3, WP5
93	University of Cambridge	UK	WP22
94	University of Manchester	UK	WP4
95	University of Oxford	UK	WP22
96	University of Plymouth	UK	WP22
97	University of Southampton	UK	WP22
98	University of Surrey	UK	WP15
99	Michigan State University, East Lansing	USA	WP15

100	Northwestern University, Evanston	USA	WP7
101	University of California, Los Angeles (UCLA)	USA	WP5
102	University of Georgia, Athens	USA	WP5
103	University of the Witwatersrand, Johannesburg	ZA	WP15