



CA COST Action CA16214

The multi-messenger physics and astrophysics of neutron stars

The recent discovery of gravitational waves will allow in the following years an unprecedented view of previously invisible parts of the Universe. This will unravel the physics of the most compact stars, the neutron stars, which are unique objects whose emission encompasses all the available multi-messenger tracers: electromagnetic waves, cosmic rays, neutrinos, and gravitational waves. These relativistic stars are also unique laboratories where not only the most extreme gravity and electromagnetism can be probed, but also the strong and weak interaction can be studied in regimes that have no hope of being explored on Earth.

The study of these objects transcends the traditional astrophysical approach and requires a multidisciplinary effort that spans from particle and nuclear physics to astrophysics, from experiment to theory, from gravitational waves to the electromagnetic spectrum. PHAROS has the ambitious goal of attacking key challenges in the physics involved in neutron stars by facing them via an innovative, problem based approach, focussing on current, and new, data and experiments, and that hinges on interdisciplinary Working Groups. Each group will have all the diversified expertise that is needed to tackle different aspects of the data and physics of neutron stars, and will deliver to the different communities several tools and deliverables prepared in a shared language. Furthermore, a key priority of this Action is promoting via training, mobility, gender and outreach activities, enthusiastic students and young researchers that will grow and spread the Action's innovative multi-disciplinary approach, with a special attention of promoting Inclusiveness Target Countries.

(Descriptions are provided by the Actions directly via e-COST.)

PHAROS

Kick-off November 22nd

http://www.cost.eu/COST_Actions/ca/CA16214

- WG1: Equation of state of dense matter
- WG2: Superfluidity/Superconductivity in dense matter and transport coefficients
- WG3: Gravitational wave signals from neutron stars
- WG4: Magnetic field formation, evolution, (in)stability and neutron star population study
- WG5: Neutron star magnetospheres, acceleration mechanisms, environment and jets

Capacity Building

- Promote the interaction, and deliver common tools, between close communities interested in the same astrophysical objects from very different but complementary research approaches.
- Train a young generation of students to a multi-disciplinary approach in their research activity, and help them grow and develop a shared language among close communities.
- Encourage young women and early career researchers to take leadership roles in PHAROS, and provide young science students with young and senior women as role models. This has an extreme importance especially given the extremely low gender balance currently present in European scientific environments.

Participations

Country	Date	Status
▶ Austria	02/10/2017	Confirmed
▶ Belgium	19/09/2017	Confirmed
▶ Bulgaria	20/07/2017	Confirmed
▶ Croatia	07/09/2017	Confirmed
▶ Czech Republic	11/10/2017	Confirmed
▶ Finland	30/08/2017	Confirmed
▶ France	20/07/2017	Confirmed
▶ Germany	24/07/2017	Confirmed
▶ Greece	03/08/2017	Confirmed
▶ Hungary	31/07/2017	Confirmed
▶ Ireland	13/09/2017	Confirmed
▶ Italy	27/09/2017	Confirmed
▶ Netherlands	10/08/2017	Confirmed
▶ Poland	27/07/2017	Confirmed
▶ Portugal	28/07/2017	Confirmed
▶ Romania	31/08/2017	Confirmed
▶ Serbia	28/07/2017	Confirmed
▶ Slovenia	01/08/2017	Confirmed
▶ Spain	23/08/2017	Confirmed
▶ Sweden	04/08/2017	Confirmed
▶ Switzerland	11/07/2017	Confirmed
▶ United Kingdom	12/07/2017	Confirmed

Total: 22

Intentions to participate

Country	Date	Status
▶ Israel	-	Intention

Total: 1

30 countries total expected

New countries and
researchers welcome!



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join the mailing list!

<http://www.ice.csic.es/cgi-bin/mailman/listinfo/pharos>