

# **FIRST LARES 2, FOURTH LARES AND SECOND GRM INTERNATIONAL WORKSHOP ROMA, 1-5 JULY 2019**

## **Monday 1 July-Auditorium of the Italian Space Agency**

10:00-10:30

**Introductory remarks: I. Ciufolini, A. Paolozzi, W.T. Ni, B. Negri, ASI president (TBC)**

10:30-12:15

**Highlights on the workshop** Chairman: Richard Matzner

Roger Penrose, Wei Tou Ni, Stefano Bianchi, Vahe Gurzadyan, Sergei Kopeikin, Claus Laemmerzahl, Slava Turishev, Ignazio Ciufolini;

12:30-14:30 Lunch

15:30

**Afternoon tours to Roman sites**

## **Tuesday 2 July-Casa dell'Aviatore**

Chairman: Richard Matzner

9:30-10:15 Roger Penrose, *On General Relativity and Cosmology (Observation of "Hawking points")*

### **Gravitomagnetism and its tests 1**

10.15-10:50 Wei-Tou Ni, *Genesis of General Relativity and the beginning of gravitomagnetism.*

10:50-11:25 Claus Laemmerzahl, *The many facets of gravitomagnetism.*

Coffee break and *registration*

12-12:35 Ignazio Ciufolini, *LARES, LARES 2 and gravitomagnetism.*

Lunch

**Afternoon tour to the ancient Roman site of Ostia Antica with a special degustation of ancient Roman bread (do not worry, it is fresh, it was indeed kept for you near a black hole since Julius Caesar times)**

## Wednesday 3 July-Casa dell'Aviatore

**Tests of General Relativity**, Chairman: Claus Laemmerzahl

9:30-10:05 Richard Matzner, *Testing Uniqueness of Free Fall using three (or more) laser-ranged satellites.*

10:05-10:40 Vahe Gurzadyan, *Satellites testing General Relativity: residuals, correlations, perturbations.*

10:40-11:15 Sergei Kopeikin, *Veiled facets of the Eddington experiment.*

Coffee break

Chairman: Sergei Kopeikin

11:50-12:25 Slava Turishev, *Advanced Laser Ranging for High-Precision Science Investigations.*

12:25-13:00 Mario Lattanzi, *GAIA and Tests of General Relativity.*

Lunch

**General Relativity, GW, alternative theories and their tests** Chairman: Wei-Tou Ni

15-15:35 Rolf Koenig, *New gravity field models for an extended test of measuring frame dragging with SLR*

15:35-16:10 Hideki Asada, *Constraining vector parts of gravity from GW observations.*

16:10-16:45 Alexander Zakharov, *Tests of gravity theories with Galactic Center observations.*

Coffee break

Chairman: Slava Turishev

17:15-17:50 Hongbo Jin, *Test of the relativistic redshifts with micro-satellites.*

17:50-18:10 Polina Dyadina, *Post-Newtonian limit of hybrid  $f(R)$ -gravity.*

18:10-18:30 Walter Del Pozzo, *Gravitational waves and fundamental physics (TBD)*

## Thursday 4 July-Casa dell'Aviatore

**Gravitomagnetism, its tests: technology and methodology** Chairman: Vahe Gurzadyan

09:30-10:05 Erricos Pavlis, *The contribution of the LARES satellites to the ITRF.*

10:05-10:40 Ulrich Schreiber, *Progress in high resolution Sagnac Interferometry.*

10:40-11:15 Philippe Bouyer, *Geodesy and relativity with large underground matter wave antenna.*

Coffee break

Chairman: Antonio Paolozzi

**The AVIO-ASI-ESA VEGA launchers**

11:50-12:25 Paolo Bellomi, *Vega family: a success story for worldwide access to space.*

12:25-13:00 Alessandro Gabrielli, *VEGA launchers and ASI*

Lunch

**Gravitomagnetism, its tests: technology and methodology** Chairman: Hideki Asada

15:00-15:35 Ulrich Schreiber, *Local Two-Way Time and Frequency Distribution for Optical Time Transfer*

15:35-16:10 Angela di Virgilio, *GINGER and the ring laser gyros.*

16:10-16:45 Antonio Paolozzi, Giampiero Sindoni e Claudio Paris, *LARES and LARES 2 design.*

Coffee Break

Chairman: Ulrich Schreiber

17:15-17:50 Catalina Curceanu, *Testing quantum mechanics in an underground laboratory*

17:50-18:25 Zongyang Li, *A digitally controlled long-term frequency stabilized laser system for passive laser gyroscopes.*

**20:00 Banquet at Hotel Forum with a view on the Roman Forum**

**Friday 5 July-Casa dell'Aviatore**

**Gravitomagnetism, astrophysics, its tests, technology and methodology**, Chairman Erricos Pavlis

10:15-10:50 Gaetano Vilasi, *Looking for a Kerr star*

10:50-11:25 Akito Araya, *Construction of a laser-strainmeter network for accurate seismic and geodetic observations.*

11:25-12:00 Jie Zhang, *Large scale passive laser gyroscopes for Earth rotation sensing at HUST*

Coffee Break

12:25-13:00 Zhengbin Li, *Multi-channel giant fiber optic gyroscopes.*

Lunch

**Miscellaneous**, Chairman Alexander Zacharov

15:00-15:20 Aram Gurzadyan, *Instability in superspace and resolvent integration of orbits*

15:20-15:40 Andreino Simonelli, *Sea storm induced microseism in the mediterranean area: source tracking with 4C observations.*

15:40 **Graduate students awards and concluding remarks**