

Gravitation and Relativity Division Fachverband Gravitation und Relativitätstheorie (GR)

Domenico Giulini
ZARM Bremen
and
Institute for Theoretical Physics
Leibniz University Hannover
Appelstraße 2, 30167 Hannover
giulini@itp.uni-hannover.de

Our division's topical focus this year is on "cosmology". This will be reflected by distinguished invited speakers on various aspects of cosmology, classical as well as quantum. Amongst others we have Ruth Durrer (Geneva) as our plenary speaker on Tuesday morning and George Ellis (Cape Town) on Tuesday afternoon as our speaker in the joint symposium on "cosmological model-building", organised together with the division *Theoretical and Mathematical Physics* and the working group on *Philosophy of Physics*. Our posters will be permanently on display throughout the week in a separate room (HS 6) and presented by their authors in a scheduled poster session on Thursday afternoon. After the poster session we will have our general assembly, to which all members of our division *General Relativity and Gravitation* are cordially invited.

Overview of Invited Talks and Sessions

Lecture rooms: HS 4 (Thierschbau, Room 2300) and HS 5 (Thierschbau, Room 2370)

Poster room: HS 6 (Wienandsbau, Neubau Innenhof, Room 0999)

Plenary Talk of GR

PV IV Di 9:00– 9:45 Plenarsaal **Testing General Relativity with Cosmological Observations** — ●RUTH DURRER

Invited Talks

GR 1.1 Mo 16:00–16:45 HS 4 **Probing the spacetime curvature using geometric optics** — ●MIKOLAJ KORZYNSKI, JULIUS SERBENTA, MICHELE GRASSO

GR 2.1 Mo 17:30–18:15 HS 4 **Physical dimensions/units and universal constants: their invariance in special and general relativity** — ●FRIEDRICH W. HEHL, CLAUD LÄMMERZAHN

GR 3.1 Di 11:00–11:45 HS 4 **An analytic approach to cosmic structure formation** — ●MATTHIAS BARTELMANN

GR 6.1 Mi 11:00–11:45 HS 4 **Modeling the strong-field dynamics of binary neutron star merger** — ●SEBASTIANO BERNUZZI

GR 8.1 Mi 14:00–14:45 HS 4 **Loop quantum cosmology, signature change, and the no-boundary proposal** — ●MARTIN BOJOWALD

GR 10.1 Do 11:00–11:45 HS 4 **Critical Phenomena in Gravitational Collapse** — ●THOMAS BAUMGARTE

GR 12.1 Do 14:00–14:45 HS 4 **Gravitational-Wave Astronomy in Action** — ●FRANK OHME

Invited talks of the joint symposium SYMD

See SYMD for the full program of the symposium.

SYMD 1.1 Mo 14:00–14:30 Plenarsaal **Analysis of historical solar Ca II K and sunspot data for irradiance studies** — ●THEODOSIOS CHATZISTERGOS, NATALIE A KRIVOVA, SAMI K SOLANKI, ILARIA ERMOLLI, ILYA USOSKIN, GENNADY KOVALTSOV

SYMD 1.2 Mo 14:30–15:00 Plenarsaal **MUSIC: A Model Unspecific Search for New Physics** — ●DEBORAH DUCHARDT, THOMAS HEBBEKER

| | | | | |
|----------|----|-------------|------------|--|
| SYMD 1.3 | Mo | 15:00–15:30 | Plenarsaal | Search for solar chameleons with an InGrid based X-ray detector at the CAST experiment — ●CHRISTOPH KRIEGER |
| SYMD 1.4 | Mo | 15:30–16:00 | Plenarsaal | Positron Annihilation Spectroscopy throughout the Milky Way — ●THOMAS SIEGERT |

Invited talks of the joint symposium SYKM

See SYKM for the full program of the symposium.

| | | | | |
|----------|----|-------------|------|--|
| SYKM 1.1 | Di | 16:30–17:10 | HS 4 | Conceptual problems with cosmological model-building from the point of view of General Relativity — ●GEORGE ELLIS |
| SYKM 1.2 | Di | 17:10–17:50 | HS 4 | Inhomogeneities in cosmology and the geometry of spacetime averaging — ●MAURO CARFORA |
| SYKM 1.3 | Di | 17:50–18:30 | HS 4 | Bayes, datasets, and priors in the hunt for dark energy — ●MICHELA MASSIMI |

Invited talks of the joint symposium SYPS

See SYPS for the full program of the symposium.

| | | | | |
|----------|----|-------------|------|---|
| SYPS 1.1 | Mi | 15:00–15:40 | HS 5 | Black-hole superradiance: Probing ultralight bosons with compact objects and gravitational waves — ●PAOLO PANI |
| SYPS 1.2 | Mi | 15:40–16:10 | HS 5 | Modelling and analyzing a binary neutron-star merger: Interpreting a multi-messenger picture — ●TIM DIETRICH |
| SYPS 1.3 | Mi | 16:10–16:40 | HS 5 | What can neutron-star mergers reveal about the equation of state of dense matter? — ●INGO TEWS |

Sessions

| | | | | |
|---------------|----|-------------|------|--|
| GR 1.1–1.3 | Mo | 16:00–17:30 | HS 4 | Classical GR |
| GR 2.1–2.3 | Mo | 17:30–18:45 | HS 4 | General Aspects: Units, History and Quantum |
| GR 3.1–3.5 | Di | 11:00–12:45 | HS 4 | Cosmology I |
| GR 4.1–4.6 | Di | 14:00–15:30 | HS 4 | Cosmology II |
| GR 5.1–5.5 | Di | 14:00–15:15 | HS 5 | Foundational Problems and General Formalism |
| GR 6.1–6.6 | Mi | 11:00–13:00 | HS 4 | Numerical Relativity |
| GR 7.1–7.7 | Mi | 11:00–12:45 | HS 5 | Modified Gravity and Applications |
| GR 8.1–8.7 | Mi | 14:00–16:15 | HS 4 | Quantum Cosmology and Quantum Gravity I |
| GR 9.1–9.5 | Mi | 17:00–19:10 | HS 4 | Quantum Gravity (joint session MP/GR) |
| GR 10.1–10.6 | Do | 11:00–13:00 | HS 4 | GR and Astrophysics I |
| GR 11.1–11.7 | Do | 11:00–12:45 | HS 5 | Quantum Cosmology and Quantum Gravity II |
| GR 12.1–12.8 | Do | 14:00–16:30 | HS 4 | Gravitational Waves |
| GR 13.1–13.6 | Do | 15:00–16:30 | HS 5 | Alternative Approaches to Quantum Gravity |
| GR 14.1–14.22 | Do | 16:30–18:30 | HS 6 | Poster Session (posters are permanently on display) |
| GR 15 | Do | 18:30–19:30 | HS 4 | General Assembly of the Gravitation and Relativity Division |
| GR 16.1–16.5 | Fr | 11:30–12:45 | HS 4 | GR and Astrophysics II |
| GR 17.1–17.5 | Fr | 11:30–12:45 | HS 5 | Alternative Approaches |

General Assembly of the Gravitation and Relativity Division

Thursday 18:30–19:30 HS4

- Report by the chairperson
- Reports on past and future events by members
- Presentation of books authored by members
- Miscellaneous