

RTG Models of Gravity – Online Colloquium

Date:	03.06.2020
Time:	14:00 - 16:30
Location:	Online: Zoom-Conference (More information will be send via the Models of Gravity mailing list)

Program

- 14:00 – 15:00 Talk 1: **Robert Brandenberger** (McGill University)
“Is Inflationary Cosmology Consistent with Fundamental Physics?”
- 15:00 – 15:30 [Coffee Break](#)
- 15:30- 16:30 Talk 2: **Stephen Taylor** (Vanderbilt University)
“Charting the next frontier of gravitational-wave astronomy with pulsar-timing arrays”

Abstracts

Talk 1: **Robert Brandenberger** (McGill University)

"Is Inflationary Cosmology Consistent with Fundamental Physics?"

The inflationary scenario is currently the paradigm of early universe cosmology. However, an embedding of inflation into a fundamental theory is missing. I will first show that there are alternative early universe scenarios which are consistent with current observations. Hence, we do not require inflation to explain the data. Then I will discuss recent challenges which indicate that standard inflation is NOT consistent with fundamental physics. Specifically, I will discuss the "Swampland Criteria" and the "Trans-Planckian Censorship Conjecture".

Talk 2: **Stephen Taylor** (Vanderbilt University)

"Charting the next frontier of gravitational-wave astronomy with pulsar-timing arrays"

The supermassive black holes that lurk in galaxy centers should form binaries as galaxies merge over cosmic time, emanating gravitational waves in the nanohertz sensitivity band of networks of Milky Way millisecond pulsars. Pulsar-timing arrays (PTAs) are poised to chart this new frontier of gravitational wave discovery within the next several years. With this new window onto the warped Universe, PTAs will bring a dramatic change in our understanding of supermassive binary black-hole demographics and dynamical interactions. The International Pulsar Timing Array (IPTA) combines precision timing data from regional collaborations in Europe, North America, Australia (and new partners in South Africa, India, and China) to accelerate these goals. I will present a state-of-the-field review, and highlight ongoing work by my IPTA colleagues to place stringent gravitational-wave limits, as well as increase near-future detection prospects.