3rd Workshop on String Theory and Gender

Wednesday 15 March 2017 - Friday 17 March 2017

Scientific Programme

Review talks:

Jan de Boer on quantum entanglement talk slides

Claudia de Rham on massive gravity **Cancelled**

James Drummond on the structure of scattering amplitudes talk slides

Balt van Rees on the conformal bootstrap talk slides

Anastasia Volovich on the structure of scattering amplitudes **Cancelled**

Biographies of gender speakers:

Mike Childress is a lecturer in the astronomy group at Southampton, working on supernovae and dark energy. He is originally from Oklahoma, and received his Bachelors from MIT and his PhD from Berkeley. Following his PhD, he worked with Brian Schmidt in Australia before joining the Southampton group. Mike is interested in exploring the causes of the "leaky pipe" of women in physics and astronomy, and in developing actions to retain women in science. talk slides

Valerie Gibson is an experimental particle physicist, working particularly on charm and bottom quark physics. She is currently the UK spokesperson for the LHCb experiment at CERN and leads the high energy physics experimental group at the Cavendish Laboratory in Cambridge.

Valerie Gibson's work on gender equality was recently recognised by the Royal Society Athena Prize. She is the Equality and Diversity Champion for Physical Sciences in Cambridge and spearheaded the Cavendish's Athena SWAN Gold Award in 2014. The Cavendish was the first university physics department in the UK to achieve an Athena SWAN Gold Award in recognition of its development of employment practices that support and further the careers of women. talk slides

Wim van Saarloos is a theoretical physicist with expertise in soft matter and granular materials. He has been based in Leiden for twenty-five years and was the director of the Lorentz Center in Leiden from 1997 to 2009. Wim van Saarloos was the director of the Dutch Physics Foundation FOM from 2009 to 2015, and then led the organizational change under which FOM became part of the Dutch national science foundation NWO. From 1 January 2017 he will resume his professorship in Leiden, combining this position with vice-president and president-elect of the Dutch Royal Academy for Arts and Sciences (KNAW).

Wim van Saarloos has a long-standing interest in gender equality in physics. In 2007 he chaired the committee for the Dutch Action Plan for physics, which included measures to increase female participation in physics. As director of FOM, he was involved with FOM's program to support and retain women in physics and pushed at a national level the target of "20 in 2020", the goal of at least 20% of Dutch professors being women by 2020. FOM is also a member of the EU Horizon 2020 project GENERA http://genera-project.com/index.php, which aims to address gender equality in physics. talk slides

Contributed Talks

Jose Edelstein (Santiago)

Title: Causality constraints in gravitational theories

Abstract: I will consider higher derivative corrections to the graviton 3-point coupling within a weakly coupled theory of gravity. Lorentz invariance allows further structures beyond that of Einstein's theory. I will argue that these structures are constrained by causality, and show that the problem cannot be fixed by adding conventional particles with low spin but adding an infinite tower of massive particles with higher spins. Implications of this result in the context of AdS/CFT, quantum gravity in asymptotically at space-times, and non-Gaussianity features of primordial gravitational waves are discussed. The case of 3D gravity is briefly discussed.

Carlos Nunez (Swansea)

Title: Non-Abelian T-Duality talk slides

Yafet Sanchez (Southampton)

Title: What is a gravitational singularity? talk slides

Abstract: In this talk, I will give an overview of different definitions of a gravitational singularity. In particular, I will focus in what is called the generalised hyperbolicity criterion and I will show that certain weak singularities can be characterised by the existence of finite energy scalar waves.

Gianmassimo Tasinato (Swansea)

Title: A geometrical approach to degenerate scalar-tensor theories talk slides

Abstract: While General Relativity is the unique consistent theory for an interacting massless spin 2 degree of freedom, the question of what is the most general scalar-tensor theory, which describes the dynamics of interacting spin 2 + spin 0 degrees of freedom, is still open. Recently, several new examples of consistent scalar-tensor theories have been discovered, with relevant applications for cosmology. I will briefly review the status of the subject, and I will then attempt to derive the structure of the new scalar-tensor theories from the dynamics of branes embedded in higher dimensional space-times. This approach allows one to find new underlying symmetries and dualities that such scalar-tensor theories obey, with interesting consequences for model building.