

A Super Day by ARCenter @ DISIT



Tuesday 5 May 2020 - Thursday 7 May 2020

DISIT/ Università' del Piemonte Orientale

Scientific Programme

The Unifying Double Complex of Differential and Integral Forms on Supermanifolds

5th May, 2020, 14.00-14.45 Simone Noja (Università dell'Insubria)

One remarkable feature in supergeometry is that the de Rham complex of differential superforms of a supermanifold is not bounded from above, and in particular there is no notion of a 'top differential superform' that can be integrated over. This has led to the introduction of new kind of forms, called "integral forms", where sections of the Berezinian bundle correspond to 'top integral forms'.

In this talk I will show how differential and integral forms arise naturally from the two spectral sequences related to a double complex of non-commutative sheaves over supermanifolds. If time permits, further directions - as the relation with symplectic geometry - will be addressed.

This is an (ongoing) joint work with Cacciatori and Re.

Join Zoom Meeting

<https://zoom.us/j/91363134006>

Hidden Symmetries of Supersymmetric Free Differential Algebras and D=11 Supergravity

5th May, 2020, 15.00-15.45 Lucrezia Ravera (Politecnico di Torino)

I will present some recent developments on supersymmetric Free Differential Algebras, focusing, in particular, on the one describing the vacuum structure of D=11 supergravity. I will describe the emergence of a hidden superalgebra underlying the theory and the role of the nilpotent fermionic generator naturally appearing for consistency of the model. I will also discuss the relation between this superalgebra and other superalgebras with 32 supercharges.

Join Zoom Meeting

<https://zoom.us/j/91363134006>

Super Hilbert schemes

5th May, 2020, 16.00-16.45 Ugo Bruzzo (SISSA)

This will be a preliminary report of joint work in collaboration with Daniel Hernandez Ruiperez on the representability of the super Picard scheme of a scheme morphism. A first step is the construction of the super Hilbert scheme of closed sub-superschemes of a supescheme having a given super Hilbert polynomial, which I will sum up in this talk.

Join Zoom Meeting

<https://zoom.us/j/91363134006>

Superfields and Superschemes

7th May, 2020, 12.00 - 12.45 Marian Lledó (University of Valencia)

We revise the notion of superfield with a functorial definition. We then we explain the non regular superschemes that appear following certain constraints on superfields and its relation with the preservation of supersymmetry.

Join Zoom Meeting

<https://zoom.us/j/99052475165>

Bundle Gerbes on Supermanifolds.

7th May, 2020, 16.00-16.45 John Huerta (University of Lisbon)

Bundle gerbes are a generalization of line bundles that play an important role in constructing WZW models with boundary. With an eye to applications for WZW models with superspace target, we describe the classification of bundle gerbes on supermanifolds, and sketch a proof of their existence for large families of super Lie groups.

Join Zoom Meeting

<https://zoom.us/j/96317045318>