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SEMINAR ZAVODA ZA TEORIJSKU FIZIKU

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Zavoda za eksperimentalnu fiziku IRB-a i Fizičkog odsjeka PMF-a)

Courant algebroids in string and membrane non-linear sigma models

Athanasios Chatzistavrakidis
Van Swinderen Institute for Particle Physics and Gravity
University of Groningen, The Netherlands

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Abstract:

Modern methods of differential geometry, notably the theory of Lie and Courant algebroids, have found numerous applications in theoretical physics over the last years, including Yang-Mills theories, sigma models and string theory. These structures are instrumental in systematically formulating theories with diverse sets of degrees of freedom (for example gauge and scalar fields in field theories, or metric and Kalb-Ramond fields in string theory) and discussing generalized local symmetries (for example algebroid gauge symmetries and T-duality). In this talk first we introduce the basic mathematical notions and discuss some examples. The main techniques that allow the construction of general classes of algebroid structures are presented. Then we shift our attention to two physical applications: (a) the gauging of sigma models that describe the propagation of bosonic strings in singular spacetimes and (b) the description of non-geometric backgrounds in string theory by means of AKSZ-type sigma models.

Voditeljica seminara:
Kornelija Passek-Kumerički
$\langle passek@irb.hr \rangle$