

RIND seminar on Mathematical Physics and String Theory

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None

Joint seminar series on Mathematical Physics and String Theory

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Super stable maps

J-holomorphic curves or pseudoholomorphic curves are maps from Riemann surfaces to symplectic manifolds satisfying the Cauchy-Riemann equations. J-holomorphic curves are of great interest because they allow to construct invariants of symplectic manifolds and those invariants are deeply related to topological superstring theory. A crucial step towards Gromov-Witten invariants is the compactification of the moduli space of J-holomorphic curves via stable maps which was first proposed by Kontsevich and Manin.

In this talk, I want to report on a supergeometric generalization of J-holomorphic curves and stable maps where the domain is a super Riemann surface. Super Riemann surfaces have first appeared as generalizations of Riemann surfaces with anti-commutative variables in superstring theory. Super J-holomorphic curves couple the equations of classical J-holomorphic curves with a Dirac equation for spinors and are critical points of the superconformal action. The compactification of the moduli space of super J-holomorphic curves via super stable maps might, in the future, lead to a supergeometric generalization of Gromov-Witten invariants.

Based on arXiv:2010.15634 [math.DG] and arXiv:1911.05607 [math.DG],
joint with
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