

Contribution Title: CONFORMAL SUPERSPACE SIGMA-MODELS
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Invited speaker:
YRS seminar: YES

Conformally invariant sigma-models on superspaces are two-dimensional supersymmetric quantum field theories which play a prominent role in a number of recent developments in mathematical physics. Apart from their applications in string theory and condensed matter physics (especially disordered systems) they also provide a geometric road towards logarithmic conformal field theories. Last but not least, they arise as critical continuum limits of certain super spin chains.

In my talk I will review recent progress on this subject, with special emphasis on supergroups and supercosets as superspaces. Three topics will be sketched: 1. How the logarithmic structure of superspace sigma-models is determined by the underlying supergeometry. 2. How quasi-abelian perturbation theory can be used to calculate exact spectra of anomalous dimensions as a function of some geometric modulus. 3. How the previous result may be used to argue for new and highly non-trivial dualities between geometric and non-geometric supersymmetric conformal field theories such as supersphere sigma-models and OSP Gross-Neveu models. These results will also be put into a wider context, especially in view of their implications for string theory / gauge theory dualities and for the quantization of strings in flux backgrounds.