Contribution ID: **100** Type: **not specified**

Generalized Freudenthal transformations and Black Holes

Friday 25 May 2018 16:55 (25 minutes)

We present a detailed description of N = 2 stationary BPS multicenter black hole solutions for quadratic prepotentials with an arbitrary number of centers and scalar fields making a systematic use of the algebraic properties of the matrix of second derivatives of the prepotential, S, which in this case is a scalar-independent matrix. The anti-involution matrix S can be understood as a Freudenthal duality $\tilde{x} = Sx$. We show that this duality can be generalized to "Freudenthal transformations"
under which the horizon area, ADM mass and intercenter distances scale up leaving constant the scalars at the fixed points. In the special case $\lambda = 1$, "S-rotations", the transformations leave invariant the solution.
Next we show that these generalized transformations leave invariant not only the quadratic preotential theories but also the general stringy extremal quartic form $_4$, $\Delta 4(x) = \Delta 4(\cos\theta x + \sin\theta\tilde{x})$ and therefore its entropy at lowest order. We make an extensive mathematical characterization of these transformations in the framework of Freudenthal triple systems.
This presentation is partiatially based in different publications made in collaboration with JJ. Fernandez-Melgarejo, A. Marrani,L.Borsten, A. Duff.

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