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Hari K Kunduri* (hkkunduri@mun.ca), Department of Mathematics and Statistics, Memorial University of Newfoundland, St John's, NL , Canada, and **James Lucietti**. *Black Holes with Lens-space horizon topology.*

Galloway and Schoen have proved that spatial cross-sections H of the event horizon of a five-dimensional, asymptotically flat, stationary black hole satisfying the dominant energy condition must have a positive Yamabe invariant. It is unclear whether every topology allowed by this constraint are realized by solutions to the Einstein equations. Under the additional assumption that the geometry admits a $U(1) \times U(1)$ isometry subgroup, the allowed topologies of H are further restricted to be S^3 , $S^1 \times S^2$, or $L(p, q) = S^3/Z_p$. Explicitly known solutions realizing the former two topologies have been found.

In this talk I will describe the first example of asymptotically flat black holes with lens space horizon topology. The geometry is regular on and outside an event horizon with $H = S^3/Z_2$. These form a 3-parameter family of solutions of supergravity, which is an extension of Einstein-Maxwell theory in five dimensions. The geometry admits Killing spinor fields (i.e. they are supersymmetric) which greatly simplifies the construction. (Received January 18, 2016)