

High Energy Physics - Theory

Cosmological Solutions on Atiyah-Hitchin Space in Five Dimensional Einstein-Maxwell-Chern-Simons Theory

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(Submitted on 27 Jan 2010)

We construct non-stationary exact solutions to five dimensional Einstein-Maxwell-Chern-Simons theory with positive cosmological constant. The solutions are based on four-dimensional Atiyah-Hitchin space. In asymptotic regions, the solutions approach to Gibbons-Perry-Sorkin monopole solutions. On the other hand, near the four-dimensional bolt of Atiyah-Hitchin space, our solutions show a bolt structure in five dimensions. The c-function for the solutions shows monotonic increase in time, in agreement with the general expected behaviour of c-function in asymptotically dS spacetimes.

Comments: 12 pages, 3 figures

Subjects: **High Energy Physics - Theory (hep-th)**; General Relativity and Quantum Cosmology (gr-qc)

Journal reference: Phys. Rev. D 81, 044027 (2010)

Cite as: [arXiv:1001.5066v1](https://arxiv.org/abs/1001.5066v1) [hep-th]

Submission history

From: Amir Masoud Ghezelbash [[view email](#)]

[v1] Wed, 27 Jan 2010 23:05:31 GMT (19kb)

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