Nonlinear Sciences > Exactly Solvable and Integrable Systems

Boundary value problems for the stationary axisymmetric Einstein equations: a disk rotating around a black hole

Jonatan Lenells

(Submitted on 7 Mar 2010)

We solve a class of boundary value problems for the stationary axisymmetric Einstein equations corresponding to a disk of dust rotating uniformly around a central black hole. The solutions are given explicitly in terms of theta functions on a family of hyperelliptic Riemann surfaces of genus 4. In the absence of a disk, they reduce to the Kerr black hole. In the absence of a black hole, they reduce to the Neugebauer-Meinel disk.

Comments:	46 pages
Subjects:	**Exactly Solvable and Integrable Systems (nlin.SI)**; General Relativity and Quantum Cosmology (gr-qc); Mathematical Physics (math-ph)
MSC classes:	83C15; 37K15; 35Q15
Cite as:	**arXiv:1003.1453v1 [nlin.SI]**

Submission history

From: Jonatan Lenells [view email]

[v1] Sun, 7 Mar 2010 11:20:21 GMT (2330kb,D)

Which authors of this paper are endorsers?

Download:

- PDF
- Other formats

Current browse context:
nlin.SI
< prev | **next >**
new | recent | 1003

Change to browse by:

gr-qc
math
math-ph
nlin

References & Citations

- CiteBase

Bookmark(what is this?)