

## Re: Solution to Einstein's Field Equations where $T^{uv} \neq 0$ ?

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*Source:* <http://sci.tech-archive.net/Archive/sci.physics.research/2006-04/msg00391.html>

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I am especially interested in any exact solutions based on the usual Maxwell energy tensor of electrodynamics  $T^u_v = (1/4\pi) [F^{ut} F_{vt} - (1/4)\lambda^u_v F^{st} F_{st}]$ . I am interested in solutions both where  $F^{uv}_u=0$  (free space) and also where  $F^{uv}_u=J^v$  (space with current sources). Conditions of interest include static spherical symmetry in the nature of Schwarzschild, and rotation with spherical symmetry about the  $z$ -axis in the nature of Kerr.

There was some work on the subject of electrovacuum solutions with axial symmetry by Ernst in the late 60s early 70s which was continued by Kinnersley, Chitre, Hauser, Hoenselaers, Xanthopoulos and recently by Sibgatullin and Manko that I think will interest you.

For some recent papers have a look at <http://arxiv.org/find/gr-qc/1/ti:electrovacuum/0/1/0/all/0/1> and references therein.

Hope I've helped.

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