



Contribution ID: 56

Type: **Talk**

Kerr's spacetime energy in general teleparallel theory of relativity

Monday 30 June 2025 14:20 (20 minutes)

The work addresses the calculation of the Kerr spacetime energy within the framework of the general teleparallel equivalent of general relativity. As an alternative to general relativity, teleparallel geometry is used instead of classical Riemannian geometry, where curvature is zero while torsion and non-metricity play an important role. Unlike the Schwarzschild metric, the Kerr metric allows for the description of the angular momentum of a central object. The work provides an overview of the geometric and physical foundations of the theory in question, the Kerr metric, the SymPy software, and the computational procedures used. The aim of the work is to calculate the energy of spacetime for the Kerr metric using the symbolic mathematics software SymPy. The primary hypothesis is that the energy of Kerr spacetime, calculated in SymPy within the framework of the general teleparallel equivalent of general relativity, is proportional to the mass. The secondary hypothesis is that, in Kerr-Schild coordinates, the canonical energy-momentum tensor vanishes if the affine connection is also equal to zero.

Author: IVASK, Roald Heinrich (University of Tartu)

Co-authors: Dr JÄRV, Laur (University of Tartu); KOIVISTO, Tomi (University of Tartu)

Presenter: IVASK, Roald Heinrich (University of Tartu)

Session Classification: Monday Parallel 1 - A106

Track Classification: Contributed talks