Šimon Knoška

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EDUCATION

DOCTORAL STUDIES AT CHARLES UNIVERSITY
Faculty of Mathematics and Physics,
Institute of Theoretical Physics
Theoretical Physics, Astronomy and Astrophysics
Oct 2021 – Present | Prague, CZ

MASTER'S STUDIES AT CHARLES UNIVERSITY
Faculty of Mathematics and Physics,
Institute of Theoretical Physics
Theoretical physics
Oct 2019 – Jun 2021 | Prague, CZ

BACHELOR'S STUDIES AT CHARLES UNIVERSITY
Faculty of Mathematics and Physics
General physics
Oct 2016 – Jun 2019 | Prague, CZ

RESEARCH

SCHWARZSCHILD-BACH BLACK HOLES | MS thesis
Supervisor | RNDr. Robert Švarc, Ph.D.
Investigation of the spherically symmetric spacetimes in the modified theories of gravity is currently carried out. The main goal is to identify Schwarzschild-like solution in so-called quadratic gravity in a more convenient form and find other solutions beyond the standard Einstein theory. Later, a discussion about the properties of these spacetimes will be done in detail.

CONFORMALLY RELATED SPACETIMES | BS thesis
Supervisor | RNDr. Robert Švarc, Ph.D.
The main objective of this work was to investigate the possibility of creating the Robinson–Trautman spacetimes from the Kundt class of seed geometries. In the first chapter, properties of the Robinson–Trautman and Kundt geometries in arbitrary dimension were summarised. Natural coordinates adapted to the null spacetime foliation generated by non-twisting shear-free affinely parametrised null geodetic congruence were introduced. In the following chapter, general conformal transformation and specific conformal relation between the Robinson–Trautman and Kundt classes of spacetimes was discussed. Finally, attempts to find solutions to the field equations by employing this conformal relation in Einstein's theory of gravity in arbitrary number of dimensions as well as in 4-dimensional quadratic gravity are performed in the last chapter.

RESEARCH INTEREST

Modified theories of gravity • Black Holes • Gravitational Waves • Exact Solutions

EXPERIENCE

BH WORKSHOP XIV | speaker
Black Hole Conference
Dec 2021 | Aveiro, PT
- presenting results on the Schwarzschild–Bach Black Holes

FYKOS | co-organiser
Correspondence competition in physics for high school students
2016 - 2020 | Prague, CZ

- creating and solving physical problems
- organising popularising lectures and excursions
- tutoring

ICPS 2019 | participant
International Conference of Physics Students
Aug 2019 | Cologne, DE
- presenting results of the Bachelor's thesis on conformally related spacetimes

ACCENTURE | Software tester
Jul 2017 – Mar 2021 | Prague, CZ

SKILLS

PROGRAMMING
Python • Mathematica • LaTeX