Abstract:
In the review part of the thesis we summarize various modified theories of gravity, especially those that are characterized by additional curvature invariants in the Lagrangian density. Further, we review non-twisting geometries, especially their Kundt subclass. Finally, from the principle of least action we derive field equations for the case with the Lagrangian density corresponding to an arbitrary function of the curvature invariants. In the original part of the thesis we explicitly express particular components of the field equations for non-gyratonic Kundt geometry in generic quadratic gravity in arbitrary dimension. Then we discuss how this, in general fourth order, field equations restrict the Kundt metric in selected geometrically privileged situations. We also analyse the special case of Gauss–Bonnet theory.