



istanbul matematiksel bilimler merkezi  
istanbul center for mathematical sciences

# NEWTON-CARTAN GRAVITY AND TORSION

Jan Rosseel

University of Vienna

## Abstract

We compare the gauging of the Bargmann algebra, for the case of arbitrary torsion, with the result that one obtains from a null-reduction of General Relativity. Whereas the two procedures lead to the same result for Newton-Cartan geometry with arbitrary torsion, the null-reduction of the Einstein equations necessarily leads to Newton-Cartan gravity with zero torsion. We show, for three space-time dimensions, how Newton-Cartan gravity with arbitrary torsion can be obtained by starting from a Schroedinger field theory with dynamical exponent  $z=2$  for a complex compensating scalar and next coupling this field theory to a  $z=2$  Schroedinger geometry with arbitrary torsion. The latter theory can be obtained from either a gauging of the Schroedinger algebra, for arbitrary torsion, or from a null-reduction of conformal gravity.

**Date :** Friday, September 29, 2017

**Time:** 11:00

**Place:** IMBM Seminar Room, Boğaziçi University South Campus