

# Very special relativity as particle in a gauge field and two-time physics

## Abstract content

The action for a (3+1)-dimensional particle in very special relativity is studied. It is proved that massless particles only travel in effective (2+1)-dimensional space-time. It is remarkable that this action can be written as an action for a relativistic particle in a background gauge field and it is shown that this field causes the dimensional reduction. A new symmetry for this system is found. Furthermore, a general action with restored Lorentz symmetry is proposed for this system. It is shown that this new action contains very special relativity and two-time physics.

## Summary

**Primary author(s) :** Dr. ROMERO, Juan Manuel (UAM-Cuajimalpa)

**Presenter(s) :** Dr. ROMERO, Juan Manuel (UAM-Cuajimalpa)