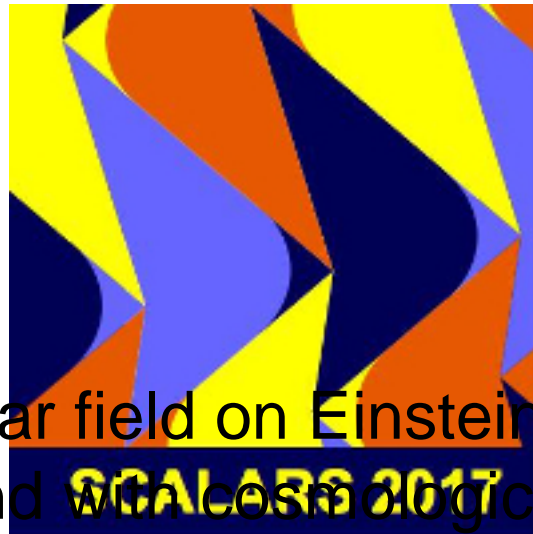


# Scalars 2017



Contribution ID : 2

## The scalar field on Einstein-Maxwell background with cosmological constant

Saturday 02 Dec 2017 at 17:45 (00h15')

### Content :

We find exact solutions to the wave equation of scalar field in the background of five-dimensional Einstein-Maxwell theory with cosmological constant where the scalar field couples to the electromagnetic field as well as to the cosmological term with two different coupling constants. We find that the five-dimensional spacetime is non-stationary and is a conformally regular spacetime, everywhere. Both the scalar and the electromagnetic field depends on time and two spatial directions. The cosmological constant takes positive, negative or zero value, depending on the value of coupling constant. We study the physical properties of the spacetime and show that the solutions are unique in five dimensions and can't be uplifted to higher-dimensional Einstein-Maxwell theory or Einstein gravity in presence of cosmological constant. Moreover, we construct new solutions to the theory where both coupling constants are equal.

**Primary authors :** GHEZELBASH, Masoud (University of Saskatchewan)

**Co-authors :**

**Presenter :** GHEZELBASH, Masoud (University of Saskatchewan)

**Session classification :** parallel session 4

**Track classification :** --not yet classified--

**Type :** --not specified--