

Kerr-Schild vector fields

José M. M. Senovilla¹,

The aim of this talk is to introduce a generalization of Killing vector fields in the case of Lorentzian geometry. They are called Kerr-Schild vector fields because they generate the so-called Kerr-Schild transformations. They happen to be associated not only with the metric g of the manifold (M, g) , but also with a given field of null directions ℓ by:

$$\mathcal{L}_\xi g = 2h\ell \otimes \ell, \quad \mathcal{L}_\xi \ell = m\ell$$

where h and m are smooth functions on M .

The main results are contained in [1].

References

- [1] B. COLL, S.R. HILDEBRANDT, J.M.M. SENOVILLA, Kerr-Schild Symmetries, *General Relativity and Gravitation* **33** (2001), 649–670.

¹Física Teórica, University of the Basque Country UPV/EHU, Apartado 644,
48080 Bilbao (Spain)
josemm.senovilla@ehu.eus