ID de Contribution: **19** Type: **Non spécifié**

# Non linear stability of Minkowski space-time with massive scalar field

*vendredi 17 juin 2016 12:10 (35 minutes)*

In this talk we will present some recent work about the system of Einstein equation coupled with a massive scalar field and the system of $f(R)$ field equation (partially published in [2]). More precisely, on the nonlinear global stability of the Minkowski space-time within these two similar contexts. In a PDE point of view, they are equivalent to the global existence of a special class of quasi-linear wave-Klein-Gordon system with small initial data.

To the author's knowledge there is not so much choice to deal with this kind of system (for a detailed explication of the major difficulty, see for example in [1] page 2), and we apply the "hyperboloidal foliation method"introduced by the author in [1] combined with some newly developed tools such as $L^\infty$ estimates on Klein-Gordon equations in curved space-time and $L^\infty$ estimates on wave equations based on the expression of spherical means. We also adapt some tools developed in classical framework for the analysis of Einstein equation into our hyperboloidal foliation framework, such as the estimates based on wave gauge conditions and the $L^\infty$ estimates on wave equations based on integration along characteristics.

References

[1] P. LeFloch and Y. Ma, The hyperboloidal foliation method, World Scientific, 2015

[2] P. LeFloch and Y. Ma, The nonlinear stability of Minkowski space for self-gravitating massive field. The wave-Klein-Gordon model, Comm. Math. Phys., published online.

**Orateur:** MA, Yue (School of Mathematics and Statistics)