1110-35-356 **Alex Ionescu** and **Victor D Lie*** (vlie@purdue.edu), 2435 A Kestral Blvd, West Lafayette, IN 47906. *Quasilinear Systems of Klein-Gordon Equations in 3D with vorticity.*

We show that for small enough initial data, the solution for the 3D quasilinear systems of Klein-Gordon equations with vorticity (and different speeds) exists for a time T which is inverse proportional relative to the size (properly measured) of the vorticity. In particular, for zero vorticity, we recover the corresponding small data global existence result of A. Ionescu and B. Pausader. Our analysis relies on a carrefully designed bootstrap (in time) algorithm which further relates with the structure of the nonlinearity. To take advantage of this structure, one is led to the study of biliniear operators of the form

$$\widehat{T[f,g]}(\xi) = \int_R \int_{R^3} e^{it\Phi(\xi,\eta)}\, m(\xi,\eta)\, \hat{f}(\xi-\eta,t)\, \hat{g}(\eta,t)\, d\eta\, dt\ .$$

This study involves Fourier transform methods adapted to the properties of the phase Φ.

This is a joint work with A. Ionescu. (Received February 24, 2015)