ANA VARGAS
Universidad Autnoma de Madrid

Null form estimates for the wave equation

This is a joint work with Sanghyuk Lee and Keith Rogers.

Null form estimates for the wave equation have been considered by several authors, as Foschi, Klainerman, Machedon, Selberg, Tao, Tataru. They are inequalities of the form

$$\begin{aligned}\|D_0^{\beta_0} D_+^{\beta_+} D_-^{\beta_-}(\phi\psi)\|_{L_t^q L_x^r} \leq C(&\|\phi(0)\|_{\dot{H}^{\alpha_1}} + \|\phi_t'(0)\|_{\dot{H}^{\alpha_1-1}}) \\ &\times (\|\psi(0)\|_{\dot{H}^{\alpha_2}} + \|\psi_t'(0)\|_{\dot{H}^{\alpha_2-1}}),\end{aligned} \tag{1}$$

where ϕ and ψ are solutions of the wave equation. We obtain sharp estimates in dimension $n \geq 3$, except for the endpoints.