Global well-posedness for the Cubic Dirac equation in the critical space

Ioan Bejenaru

Abstract. We establish global well-posedness and scattering for the cubic Dirac equation for small data in the critical space $H^1(\mathbb{R}^3)$. The main ingredient is obtaining a sharp end-point Strichartz estimate for the Klein-Gordon equation. In a classical sense this fails and it is related to the failure of the endpoint Strichartz estimate for the wave equation in space dimension three. We construct systems of coordinate frames in which endpoint Strichartz estimates are recovered and energy estimates are established.