BILINEAR FORMS ON SOBOLEV SPACES

Abstract. We give a characterization the boundedness of the bilinear form defined by

$$(f,g) \in \dot{H}^s(\mathbb{R}) \times \dot{H}^s(\mathbb{R}) \to \int_{\mathbb{R}} (-\Delta)^{s/2}(fg)(x)(-\Delta)^{s/2}(b)(x)dx,$$

in the product of homogeneous Sobolev spaces $\dot{H}^s(\mathbb{R}) \times \dot{H}^s(\mathbb{R})$, $0 < s < 1/2$. We deduce a characterization of the space of pointwise multipliers from $\dot{H}^s(\mathbb{R})$ to its dual $\dot{H}^{-s}(\mathbb{R})$ in terms of trace measures. This is a joint work with Joan Fàbrega and Joaquín M. Ortega.