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**Nestor Guillen\***, nguillen@math.umass.edu, and **Russell Schwab**. *Min-max formulas for nonlocal elliptic operators and applications.*

A mapping  $F$  between spaces of real valued functions is said to have the “global comparison property” (GCP) if  $u \leq v$  everywhere with  $u = v$  at some point  $x$  means that  $F(u) \leq F(v)$  at this point  $x$ . A classical result of Courrege says that a continuous linear map from  $C^2(\mathbb{R}^d)$  to  $C^0(\mathbb{R}^d)$  has the GCP if and only if it is a sum of jump and drift-diffusion operators. In work with Russell Schwab, we characterize nonlinear maps having the GCP as those given by a min-max of linear operators having the GCP. This result provides representation formulas for the Dirichlet-to-Neumann map of nonlinear elliptic equations, and for the interface velocity for various free boundary problems, respective applications will be discussed along with a list of related questions which are open. (Received March 18, 2017)