

1060-35-57

M Cristina Caputo* (caputo@math.utexas.edu), Dept of Mathematics, Univ of Texas, Austin, Austin, TX 78712, and **Nestor Guillen**, Dept of Mathematics, Univ of Texas, Austin, Austin, TX 78712. *Regularity for non-local almost minimal boundaries.*

We introduce a notion of non-local almost minimal boundaries similar to that introduced by Almgren in geometric measure theory. Extending methods developed recently for non-local minimal surfaces we prove that flat non-local almost minimal boundaries are smooth. This can be viewed as a non-local version of the Almgren-De Giorgi-Tamanini regularity theory. The main result has several applications, among these $C^{1,\alpha}$ regularity for sets with prescribed non-local mean curvature in L^p and regularity of solutions to non-local obstacle problems. This is a joint work with N. Guillen. (Received March 15, 2010)