

Ann. Scuola Norm. Sup. Pisa Cl. Sci. (5)  
Vol. VII (2008), 407-446

## **Hypersurfaces with free boundary and large constant mean curvature: concentration along submanifolds**

MOUHAMED MOUSTAPHA FALL AND FETHI MAHMOUDI

**Abstract.** Given a domain  $\Omega$  of  $\mathbb{R}^{m+1}$  and a  $k$ -dimensional non-degenerate minimal submanifold  $K$  of  $\partial\Omega$  with  $1 \leq k \leq m - 1$ , we prove the existence of a family of embedded constant mean curvature hypersurfaces in  $\Omega$  which as their mean curvature tends to infinity concentrate along  $K$  and intersecting  $\partial\Omega$  perpendicularly along their boundaries.

**Mathematics Subject Classification (2000):** 53A10 (primary); 53C21, 35R35 (secondary).