

# APPROXIMATION OF $SBV$ FUNCTIONS WITH POSSIBLY INFINITE JUMP SET

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We prove an approximation result for functions  $u \in SBV(\Omega; \mathbb{R}^m)$  such that  $\nabla u$  is  $p$ -integrable,  $1 \leq p < \infty$ , and  $g_0(|u|)$  is integrable over the jump set (whose  $\mathcal{H}^{n-1}$  measure is possibly infinite), for some continuous, nondecreasing, subadditive function  $g_0$ , with  $g_0^{-1}(0) = \{0\}$ . The approximating functions  $u_j$  are piecewise affine with piecewise affine jump set; the convergence is that of  $L^1$  for  $u_j$  and the convergence in energy for  $|\nabla u_j|^p$  and  $g([u_j], \nu_{u_j})$  for suitable functions  $g$ . In particular,  $u_j$  converges to  $u$   $BV$ -strictly, area-strictly, and strongly in  $BV$  after composition with a bilipschitz map. If in addition  $\mathcal{H}^{n-1}(J_u) < \infty$ , we also have convergence of  $\mathcal{H}^{n-1}(J_{u_j})$  to  $\mathcal{H}^{n-1}(J_u)$ . This is a joint work with Sergio Conti and Matteo Focardi.