1057-35-113 **Monica Torres*** (torres@math.purdue.edu), 150 N. University Street, West Lafayette, IN 47907, and **Thierry DePauw** (thierry.depauw@uclouvain.be), Chemin du Cyclotron 2, Louvain-la-Neuve, Belgium. *On the solvability of the equation* div $v = F$.

We show that the equation div $v = F$ has a solution v in the space of continuous vector fields vanishing at infinity if and only if F acts linearly on $BV_{\frac{m}{m-1}}(\mathbb{R}^m)$ (the space of functions in $L^{\frac{m}{m-1}}(\mathbb{R}^m)$ whose distributional gradient is a vector valued measure) and satisfies the following continuity condition: $F(u_j)$ converges to zero for each sequence $\{u_j\}$ such that the measure norms of ∇u_j are uniformly bounded and $u_j \rightharpoonup 0$ weakly in $L^{\frac{m}{m-1}}(\mathbb{R}^m)$. In this talk we will also discuss the solvability of the equation in other spaces of vector fields. (Received January 14, 2010)