1047-35-136 **Juan J Manfredi*** (manfredi@pitt.edu), 140 Thackeray Hall, 139 University Drive, Pittsbugh, PA 15260, and **Mikko Parviainen** and **Julio D Rossi**. *An Asymptotic Mean Value Characterization for p-harmonic functions.*

We characterize $p$-harmonic functions in terms of an asymptotic mean value property. A $p$-harmonic function $u$ is a viscosity solution to $\Delta_p u = \operatorname{div}(|\nabla u|^{p-2}\nabla u) = 0$ with $1 < p \leq \infty$ in a domain $\Omega$ if and only if the expansion

$$u(x) = \frac{\alpha}{2}\left\{\max_{B_\varepsilon(x)} u + \min_{B_\varepsilon(x)} u\right\} + \frac{\beta}{|B_\varepsilon(x)|}\int_{B_\varepsilon(x)} u\,dy + o(\varepsilon^2)$$

holds as $\varepsilon \to 0$ for $x \in \Omega$ holds in a weak sense, which we call viscosity sense. Here the coefficients $\alpha, \beta$ are determined by $\alpha + \beta = 1$ and $\alpha/\beta = (p-2)/(N+2)$. (Received January 25, 2009)