1117-43-353 **Xiaoyue Cui*** (cuixe@ucmail.uc.edu), 727 Martin Luther King W, Apt. 514W, Cincinnati, OH 45220, and **Guozhen Lu** (gzlu2001@gmail.com). *$L^p$-differentiability of the functions in Sobolev space on Heisenberg groups.*

$L^p$ differentiability was introduced by Calderon and Zygmund in their study of the local properties of solutions of elliptic differential equations. As the Sobolev spaces arise readily in the study of partial differential equations. it is not surprsing that Sobolev functions possess an $L^p$ derivative. It would be natuarl to expect an analogue $L^p$-type convergence to be true for functions in the Sobolev space $W^{1,p}(\mathbb{H})$. We establish the necessary and sufficient condition for $f \in W^{1,p}(\mathbb{H})$ as $p > 1$. In fact, we characterize the Sobolev functions in $W^{1,p}$ on Heisenberg groups. (Received January 17, 2016)