1108-42-425 **Jiawei Shen*** (`fd8315@wayne.edu`), 940 West Forest Avenue, Apt. 5, Detroit, MI 48201. *The Characterization of Sobolev spaces in the metric spaces.* Preliminary report.

This paper mainly aims to characterize the Sobolev space for $p = 1$ (i.e. $W^{1,1}$) in the general metric space. Such characterization in the Euclidean space was given by Hajlasz. Fortunately, if we assume the metric space is equipped with the doubling measure and satisfies the s-regular property, for example the Heisenberg group, we can also obtain the Poincaré inequality in the metric space for $p = 1$. Hence, the characteriztion of $W^{1,1}$ follows. (Received January 19, 2015)