1062-46-57   **Piotr Hajlasz*** (`hajlasz@pitt.edu`), University of Pittsburgh, Department of Mathemtics, 301 Thackeray Hall, Pittsburgh, PA 15260. *Approximation of Sobolev mappings into metric spaces.*

This will be a brief survey of recent results related to the problem of density of Lipschitz mappings in the space of Sobolev mappings from a manifold into a metric space or between metric spaces. The following topics will be discussed:

(1) A complete characterization (in terms of homotopy groups) of Lipschitz polyhedra Y such that for every space X supporting the p-Poincaré inequality, Lipschitz mappings are dense in the space of Sobolev mappings $W^{1,p}(X,Y)$.

(2) The Sobolev space of mappings from a manifold into a metric space $W^{1,p}(M,X)$ can be defined with a help of an isometric embedding of X into a Banach space (for example ℓ^∞). It turns out that the answer to the question whether Lipschitz mappings are dense in the space $W^{1,p}(M,X)$, may depend on the particular choice of the isometric embedding of X.

(3) The problem of approximation of Sobolev mappings into the Heisenberg group by Lipschitz mappings. Connection to Lipschitz homotopy groups of the Heisenberg group. (Received July 21, 2010)