1057-46-345　　　　　**Piotr Hajlasz*** (`hajlasz@pitt.edu`), University of Pittsburgh, Department of Mathematics, 301 Thackeray Hall, Pittsburgh, PA 15260, and **Pawel Goldstein**. *Sobolev mappings, degree, homotopy classes and rational homology spheres.* Preliminary report.

In the talk I will discuss degree theory in the Orlicz-Sobolev space of mappings between manifolds. The manifolds are n-dimensional, smooth, compact, orientable and without boundary. The Orlicz-Sobolev space is close to $W^{1,n}$, but larger and, in particular, the Jacobian of an Orlicz-Sobolev mapping is not necessarily integrable, so we cannot define degree by the usual integral formula and there is no obvious way to control degree by the Orlicz-Sobolev norm. It turns out, however, that in this setting degree is integer valued and continuous in the Orlicz-Sobolev norm if and only if the universal cover of the target manifold is not a rational homology sphere. I will also discuss related results about the existence of homotopy classes in the Sobolev space of mappings. (Received January 25, 2010)

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