1077-55-2258 **Daniel Pryor*** (dmp5p@virginia.edu). *Embedding Calculus and Topological Categories.*

Embedding Calculus, as described by Weiss, is a calculus of functors, suitable for studying contravariant functors from the poset of open subsets of a smooth manifold M, denoted $\mathcal{O}(M)$, to a category of topological spaces (of which the functor $\mathrm{emb}(-, N)$ for some fixed N is a prime example). Polynomial functors of degree k can be characterized by their restriction to the subposet of $\mathcal{O}(M)$ consisting of open sets which are a disjoint union of at most k components, each diffeomorphic to the open unit ball. In this talk, we consider the situation in which M is given as a codimension zero submanifold of a fixed Euclidean space. Then we can characterize polynomial functors by their behavior on the more restrictive subposet consisting of elements which are a disjoint union of actual (translations and scalings of) open balls. Furthermore, these subposets carry a natural topology which can be kept track of while forming polynomial approximations to functors. We show that the Taylor towers generated in this richer setting agree with the previous ones. (Received September 22, 2011)