1137-65-174 **Jeffrey S Ovall***, Portland State University, PO Box 751, and **Akash Anand**, **Steffen Weisser** and **Samuel Reynolds**. *A Trefftz-Nyström method for finite elements on (curvilinear) polygonal meshes.*

In the past several years there has been a surge in the development of finite element methods on meshes whose cells are allowed to be general polytopes. In this talk we consider families of finite elements on (curvilinear) polygonal meshes, that are defined implicitly on each mesh cell as solutions of local Poisson problems. We will discuss some of the relevant theoretical and computational features of working with such function spaces, and describe a practical approach for finite element computations in these spaces. Numerical examples will be provided that illustrate many of the features we have highlighted. (Received February 02, 2018)