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**Venkata Raghu Tej Pantangi\*** (pvrt1990@ufl.edu) and **Peter Sin.** *Smith groups and Critical groups of Polar Graphs.*

The Smith group and Critical group are interesting invariants of a graph. The Smith group of a graph is the abelian group whose cyclic decomposition is given by the Smith normal form of the adjacency matrix of the graph. The *critical* group is the finite part of the abelian group whose cyclic decomposition is given by the Smith normal form of the Laplacian matrix of a graph. The order of the *critical* group is the number of spanning forests of the graph. There are very few families of graphs with known Smith Groups and *critical* Groups. It is therefore of interest to calculate these invariants for some well known families of graphs. In this presentation, we shall compute the elementary divisors of the adjacency and Laplacian matrices of families of polar graphs. These graphs have as vertices the isotropic one-dimensional subspaces of finite vector spaces with respect to non-degenerate forms, with adjacency given by orthogonality. This is joint work with Peter Sin. (Received September 15, 2017)