1141-58-24 **Hartmut Führ** and **Isaac Z. Pesenson*** (pesenson@temple.edu), Department of Mathematics, Temple University, Philadelphia, PA 19122. *Poincaré and Plancherel-Polya inequalities in harmonic analysis on weighted combinatorial graphs.*

We prove Poincaré and Plancherel-Polya inequalities for weighted ℓ^p -spaces on weighted graphs in which the constants are explicitly expressed in terms of some geometric characteristics of a graph. We use Poincaré type inequality to obtain some new relations between geometric and spectral properties of the combinatorial Laplace operator. Several well known graphs are considered to demonstrate that our results are reasonably sharp.

The Plancherel-Polya inequalities allow for application of the frame algorithm as a method for reconstruction of Paley-Wiener functions on weighted graphs from a set of samples. The results are illustrated by developing Shannon-type sampling in the case of a line graph. (Received June 26, 2018)