

## **Eigenvalues and eigenfunctions of locally finite graphs**

A graph is called locally finite if degrees of all its vertices are finite. For a locally finite graph  $\Gamma$  and a field  $F$ , eigenvalues and eigenfunctions of  $\Gamma$  over  $F$  are defined as eigenvalues and eigenfunctions of the adjacency matrix of  $\Gamma$  over  $F$ , acting in the natural way on the vector space over  $F$  of all  $F$ -valued functions on the vertex set of  $\Gamma$ . In the talk, we formulate some results of the theory of eigenvalues and eigenfunctions of infinite locally finite connected graphs over fields developed in [V.I. Trofimov, On adjacency operators of locally finite graphs, *Izv. Math.*, 88:3 (2024), 542-589]. A special emphasis will be placed on the case of fields of characteristic 0 and especially on the case of field  $\mathbf{C}$ .