

# Pseudodifferential operators on periodic graphs

Vladimir S. Rabinovich, Steffen Roch

(Submitted on 26 Jul 2011)

The main aim of the paper is Fredholm properties of a class of bounded linear operators acting on weighted Lebesgue spaces on an infinite metric graph  $\Gamma$  which is periodic with respect to the action of the group  $\mathbb{Z}^n$ . The operators under consideration are distinguished by their local behavior: they act as (Fourier) pseudodifferential operators in the class  $\Psi^0$  on every open edge of the graph, and they can be represented as a matrix Mellin pseudodifferential operator on a neighborhood of every vertex of  $\Gamma$ . We apply these results to study the Fredholm property of a class of singular integral operators and of certain locally compact operators on graphs.

Comments: 22 pages

Subjects: **Functional Analysis (math.FA)**

Cite as: **arXiv:1107.5208 [math.FA]**

(or **arXiv:1107.5208v1 [math.FA]** for this version)

## Submission history

From: Steffen Roch [[view email](#)]

[v1] Tue, 26 Jul 2011 13:13:29 GMT (19kb)

*[Which authors of this paper are endorsers?](#)*

## Download:

- [PDF](#)
- [PostScript](#)
- [Other formats](#)

## Current browse context:

math.FA

[< prev](#) | [next >](#)

[new](#) | [recent](#) | [1107](#)

## Change to browse by:

[math](#)

## References & Citations

- [NASA ADS](#)

## Bookmark (what is this?)



Science  
WISE