

Pseudodifferential operators on graphs

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The Rempel–Schulze theory of pseudo-differential operators on \mathbb{R}^+ will be introduced and then extended to graphs. Such operators arise for instance in some photonic crystal models, as well in modeling so called “leaky wires.” It will be shown how the compatibility conditions at the vertices can be analyzed using the Mellin representation of the Dirichlet-to-Neumann operator.

No previous knowledge of Mellin operator techniques will be assumed (i.e. proper function spaces, relation between pseudo-differential and Mellin operators, etc.).