

Representation Theorems for indefinite quadratic forms and applications

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In this talk the relation between quadratic forms and operators is considered.

The main question is whether a symmetric sesquilinear form  $b$  defines a self-adjoint operator  $B$  by  $b[x, y] = \langle x, By \rangle$  and whether the operator  $B$  allows to reconstruct the form  $b$ . For bounded or semibounded closed forms, classic results give an affirmative answer to these questions.

Here, we investigate these questions for in general unbounded, non-semibounded forms. As an application, Stokes operators on general domains and indefinite differential operators of the type  $\operatorname{div}H \operatorname{grad}$  are defined and investigated.

This talk is based on joint work with A. Hussein, V. Kostrykin, D. Krejčířík, K. A. Makarov, K. Veselić.