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On 2-fold Completeness of the Eigenfunctions for the Strongly Irregular Quadratic Pencil of Differential Operators of Second Order

O. V. Parfilova

Saratov State Law Academy, Russia, 410056, Saratov, Volskaya st., 1, Oksana_Parfilova@mail.ru

A class of strongly irregular pencils of ordinary differential operators of second order with constant coefficients is considered. The roots of the characteristic equation of the pencils from this class are supposed to lie on a straight line coming through the origin and on the both side of the origin. Exact interval on which the system of eigenfunctions is 2-fold complete in the space of square summable functions is found.

Key words: quadratic pencil, second order pencil, pencil of ordinary differential operators, two-point boundary conditions, homogeneous differential expression with constant coefficients, completeness of the system of eigenfunctions, non-completeness of the system of eigenfunctions.

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