



UDC 517

## On Necessary Conditions for a Minimum of a Quadratic Functional with a Stieltjes Integral and Zero Coefficient of the Highest Derivative on the Part of the Interval

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In this paper we obtain a necessary condition for an extremum of a quadratic functional with a Stieltjes integral in the case where the coefficient of the highest derivative may vanish on a part of the interval. It is shown that the resulting mathematical model has the property of non-degeneracy. It is proved that a Variable boundary problem that arises as a necessary condition for an extremum is an «intermediate» position between the boundary value problems of fourth- and second-order — the solution space has dimension three.

*Key words:* functional, a necessary condition, Stieltjes integral, derivative on the measure.

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