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Singular quadratic functionals of one dependent variable. (English) Zbl 0838.34036

Commentat. Math. Univ. Carol. 36, No. 2, 219-237 (1995).

The authors consider the singular quadratic functionals over $W_{\text{loc}}^{1,2}([a, +\infty[)$,

$$I(u) = \alpha u^2(a) + \liminf_{b \rightarrow +\infty} \left[\gamma u^2(b) + \int_{\alpha}^b (r(s)u'^2(s) - p(s)u^2(s)) ds \right]$$

subjected to boundary conditions

$$\lim_{b \rightarrow +\infty} D \begin{pmatrix} u(a) \\ u(b) \end{pmatrix} = 0,$$

where D is a 2×2 matrix; $r^{-1}, p \in L_{\text{loc}}([a, +\infty[)$, $r \geq 0$, $\alpha, \gamma \in \mathcal{R}$. In particular they discuss necessary and sufficient conditions for the nonnegativity of I either in the case of free end points or under boundary conditions of different types. For recent connected results see the first author and *P. Zezza* [Comment. Math. Univ. Carolinae 33, 411-425 (1992; [Zbl 0779.49026](#))].

Reviewer: [A.Salvadori](#) (Perugia)

MSC:

34C10 Oscillation theory, zeros, disconjugacy and comparison theory for ordinary differential equations

Cited in 1 Document

Keywords:

singular quadratic functionals; boundary conditions

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