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Abstracts of Short Communications and Posters

Section:

17. Control Theory and Optimization

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Optimal synthesis of controlled systems near a focus

Consider a twodimensional controlled system

$$\dot{\vec{X}} = \vec{F} + \vec{G}u,\ \ u \in [0,1],\ \ I = \int_0^\infty C(\vec{X})\,dt \ \rightarrow\ \min$$

where $\vec{X} \in \mathbf{R}^2$, 0 is a focus of the system $\dot{\vec{X}} = \vec{F}$, $\vec{G}$ is non-vanishing vector field, u is control. $\vec{F},\ \vec{G},\ C$ are three times continuously differentiable in a neighbourhood of 0, C begins with quadratic terms.
Necessary and satisfying conditions on $\vec{F},\ \vec{G},\ C$ for existence of optimal synthesis are given in the general case. The optimal synthesis is described if exists.