MOOSE

MOdel based Optimal input Signal dEsign Toolbox

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**What is MOOSE?**

MOOSE is a model based optimal input design toolbox developed for Matlab.

**What does MOOSE do?**

MOOSE solves optimization problems common in experiment design in system identification for control.
Optimal input design problems

Objective:
Find an input signal that minimizes the cost related to the system identification experiment.

Constraint:
A specified control performance is guaranteed when using the estimated model in the control design.
Optimal input design problems (cont.)

Optimization problem:

\[
\begin{align*}
\text{minimize} \quad & f_{\text{cost}}(\Phi_u) \\
\text{subject to} \quad & \mathcal{E}_{SI}(\alpha) \subseteq \Theta_{\text{app}}(\gamma) \\
& 0 \leq \Phi_u(\omega), \quad \forall \omega
\end{align*}
\]

Can be approximated as a convex problem and solved in MOOSE.
Features of MOOSE

- design of input spectrum, $\Phi_u(\omega)$.
- applications oriented design.
- classical input design, such as D-optimal.

- compatibility with Matlab Control System Toolbox.
- easy-to-use text interface.
MOOSE

www.ee.kth.se/moose