

Abstract Submitted
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Synchronization

of

RLC oscillators HELENE NGUEWOU-HYOUSSE, DEREK PALEY, University of Maryland - College Park — Caterpillars' motion, although not fast or efficient, has some advantages: They are flexible and can move through complex terrains, and there is no difference between horizontal and vertical locomotion. For these reasons, caterpillar-inspired robots may be safe and reliable, with applications in search and rescue. This talk introduces an approach to modeling the locomotion dynamics of a caterpillar using a network of RLC circuits connected through spring-like and damping local interactions. Graph theory is used as a tool to describe a bidirectional network of RLC oscillators with and without a leader (*de*Centralized Pattern Generator). The synchronization of the system is verified theoretically and experimentally, and the stability is studied using matrix theory and phase model analysis.

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