

An optimal gait problem for a bio-inspired locomotion model

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ABSTRACT

Biological and bio-inspired locomotion is usually described by recognizing periodic patterns, called *gaits*, in the movement of limbs or, more generally, of other body parts. In this talk we discuss the optimal gait problem for a model of soft-bodied crawler, described mathematically as a sweeping process. The elasticity of the body of the locomotor implies that a periodic input is in general not producing a relative periodic evolution of the system, due to the initial deformation of the body influencing the evolution of the system. Hence, we will first show the well-posedness of the drift velocity associated to a gait in terms of the asymptotic behaviour of the system, in order to study optimality on the limit cycles.