The Control of The Hyper-redundant Manipulators by Frequency Criteria

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Abstract: The control problem of hyper-redundant arms with continuum elements by frequency criteria is discussed. First, there is concern with the dynamic model of the continuum arm for the position control during non-contact operations with the environment. A frequency stability criterion based on the Kalman – Yakubovich – Popov Lemma and P and PD control algorithms is proposed. The control algorithms based on SMA actuators are introduced. Numerical simulations of the arm motion toward an imposed target are presented.

Keywords: hyper-redundant robot, frequency criterion, SMA actuator.