STAGE-BY-STAGE MODELING OF UNDISTURBED MOTION OF POLY-LINK ROBOTS WITH CONTINUAL DISCRETE MANIPULATION SYSTEMS WITH STIFF UNITS OF VARIABLE GEOMETRY

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The notion of 'undisturbed motion' in this paper expresses the natural elastic oscillations of a robot manipulation system (MS) insulated from external effects. The natural frequencies and the normal functions of a two-link robot with a manipulation system of 'stiff units with variable geometry' are determined. The differential equations of the natural oscillations of systems are worked out and their common solution is determined.

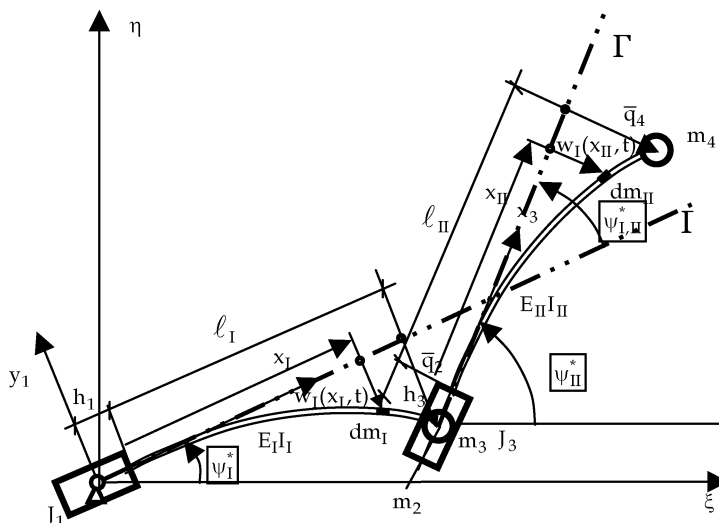Key words : *poly-link robot, stiff unit, variable geometry*

Fig.1: Natural oscillations of multi-link non-special continual discrete system

The two-link robot modeling with anthropomorphic structure modeling (only R-connections : Fig. 1) has been done with the following hypotheses :

Hypothesis 1 : The driving modules are made with stiff mechanisms without clearances that can put non-linearity of that type into the dynamic models.

Hypothesis 2 : The links of robots consist of long elastic rods the elasticity of which dominates over that in the modules.

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