SM17S_12464

XXI International Congress of Theoretical and Applied Mechanics
Warsaw, Poland, August 15–21, 2004

Expression on the Deflection of a Flexible Thin Rod and It's Measurement

Kohichi Miura, Tetsu Nishimura

Nihon University, Department of Mechanical Engineering, College of Science & Technology, Tokyo, Japan

Many mechanical systems such as industrial robots, automated production systems, and crane systems which containing cable elements, power cable, a distributing cable and cable carrier are able to perform variable and large transformation and rotational displacements. Along with a recent speeding up or high performances of these mechanical systems, these cable elements to meet the severe condition is required. In these cases, cable elements are strained with bending deformation accompanied with a torsional deformation. Since it is difficult to estimate directly the torsion and the curvature of deformable cable elements, to obtain a broad view of their motion is an effective measurement. In this study, useful methods are investigated for the kinematical measurement of torsion and curvature of a circular cable element which is recorded by two high-speed video cameras. The measurement of cable element, suggested here, may be available for a motion analysis of cable structures.

View the extended summary