

MATERIALS AND STRUCTURES SYMPOSIUM (C2)
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A NEW METHOD FOR CG MEASUREMENT IN DETERMINATION OF MASS PROPERTIES OF
SPACECRAFTS AND THEIR COMPONENTS

Abstract

The determination of mass properties of spacecraft has very important role in space missions. It is a quite complicated process due to the many components of a spacecraft that include attachments, interfaces, bolts, cabling. Hence these calculations demand much effort and care, experimental verification of structure is necessary and this is a time-consuming process. Between these properties, determination of CG (center of gravity) location has special importance because this is the first step for determination of MOI (moments of inertia). In this paper, we try to introduce various determination methods of CG location and compare them together, then we introduce a new high speed CG measurement method. This method is also accurate and requires only three time positioning instead of four time positioning in traditional methods. In this method, positioning of object reduces from four orientations at 90 degrees to three orientations at 120 degrees and thus, this method causes to decrease time and cost in determination of CG location.