

FINAL PROJECT

**DIMENSIONAL SYNTHESIS AND KINEMATIC ANALYSIS OF PURE
ROTATIONAL 3 RSR PARALLEL MECHANISM**

Submitted to the Mechanical Engineering Department of Andalas University in Partial
Fulfillment of the Requirement for the Degree of Bachelor (S1)

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PADANG, 2018

ABSTRACT

This research describes about spherical parallel mechanism on three degrees of freedom pure rotational parallel mechanism (3-RSR). There are several kinematic constants are needed to be specified. Determination of kinematic constants are affected by several considerations. In this research workspace, singularity and limitation of joint connecting will be applied to obtain the optimal set of kinematic constant. Then forward kinematic was also discussed relationships between input joint displacement and platform orientation.

Based on calculation results, it was obtained the optimal configuration of kinematic constants specified as angle of joint revolute with respect to base (θ_1)= 45° , angle of joint revolute with respect to platform (θ_2)= 30° , Length of first link (L_1)= 2.5 , radius of platform (r_p)= 0.7 and radius of base (r_b)= 1 and then the formulation of forward kinematic was successfully derived.

Keyword: workspace, singularity, spherical parallel mechanism