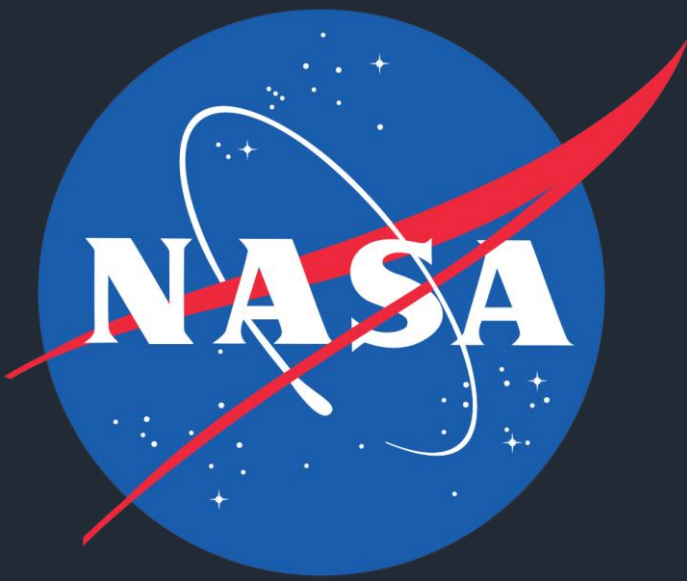
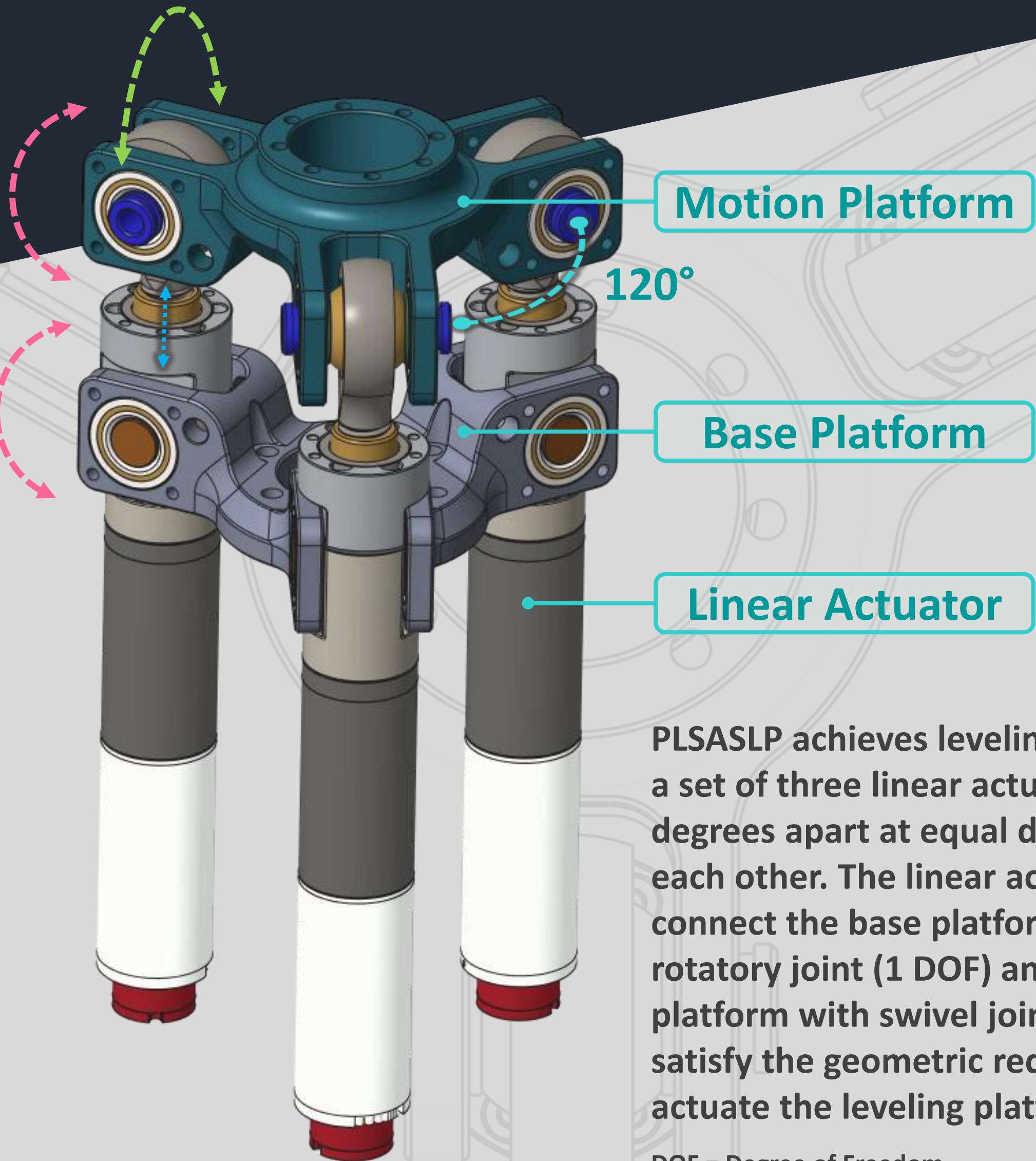


Programmable Lead Screw Actuated Self-Leveling Platform – PLSASLP

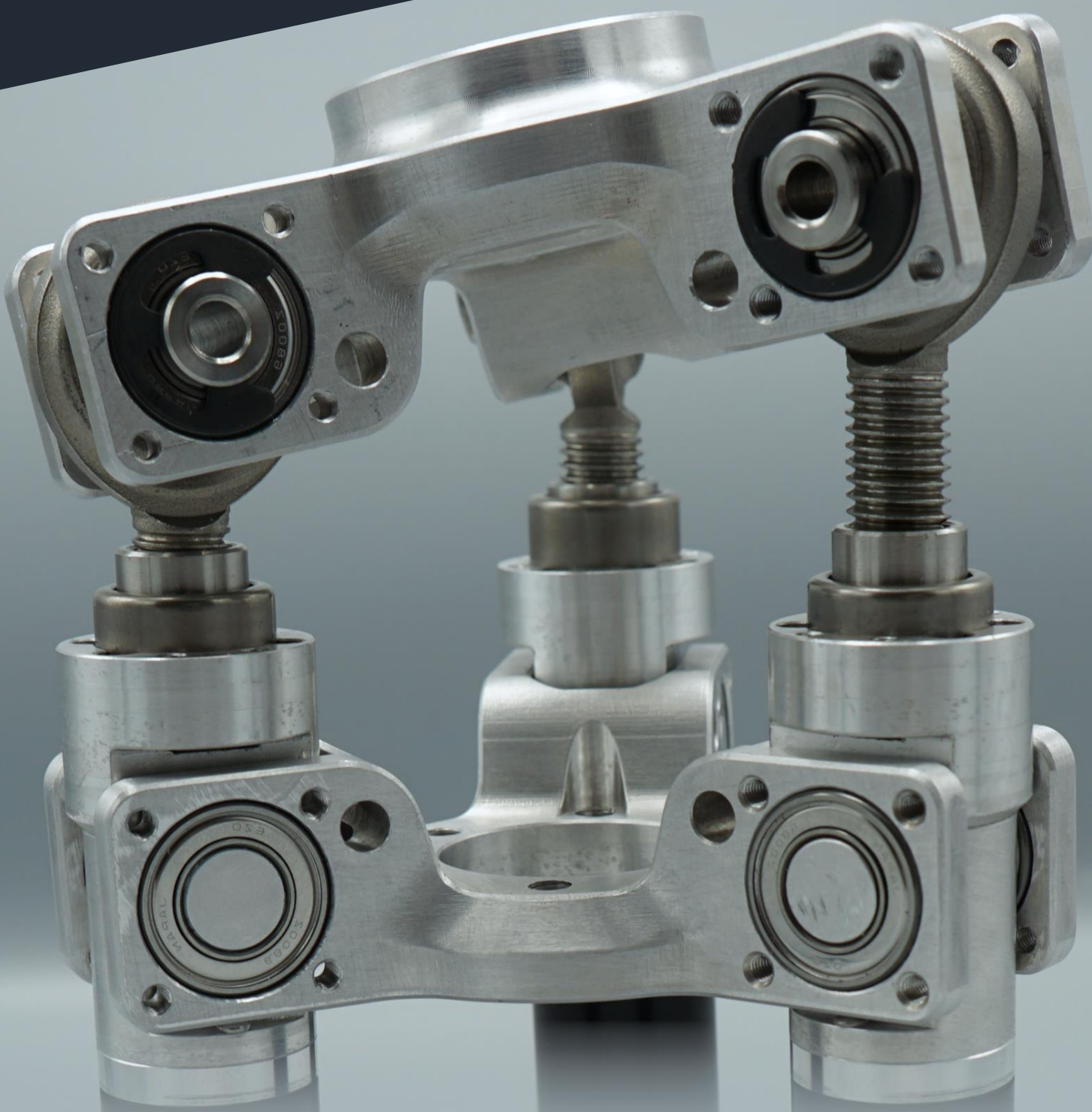


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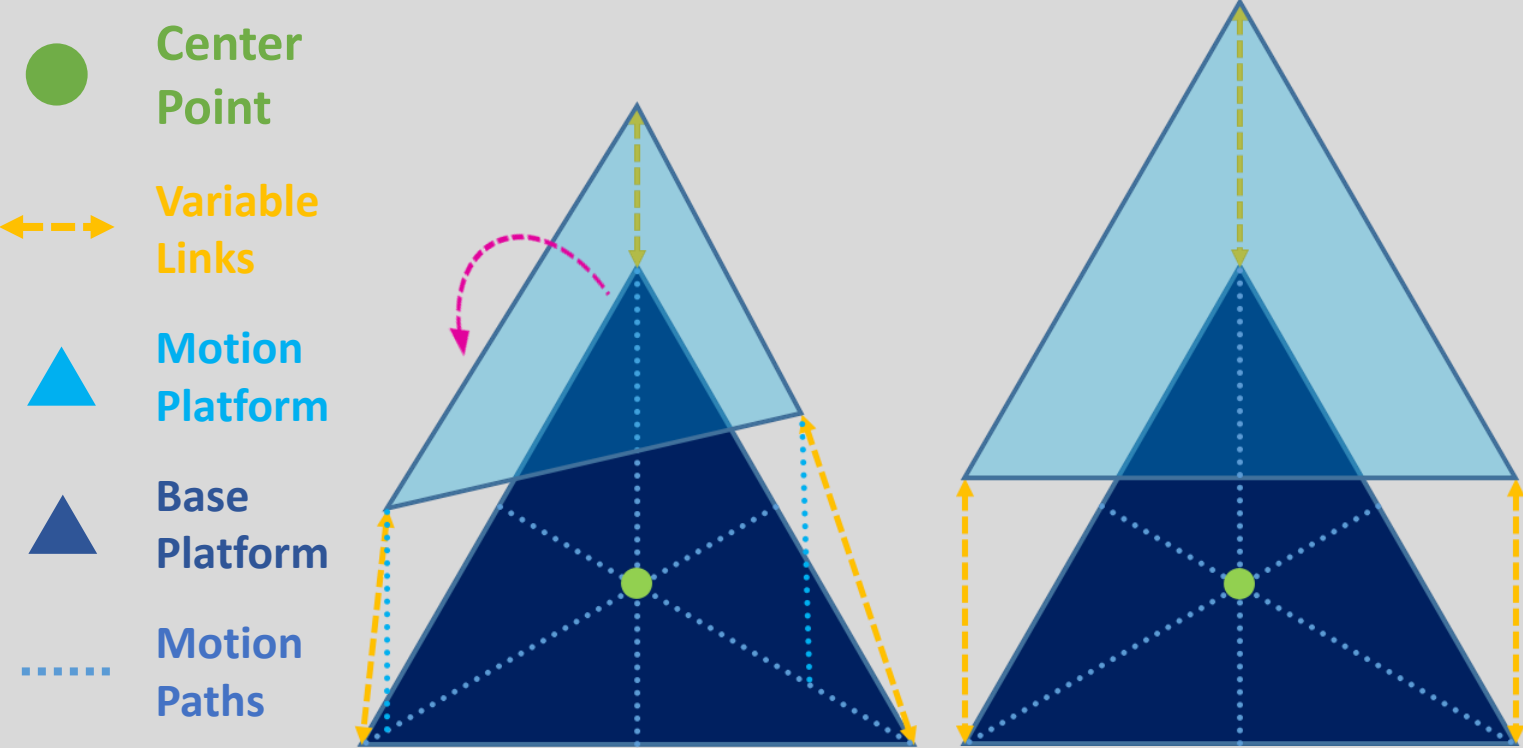
PLSASLP achieves leveling by utilizing a set of three linear actuators set 120 degrees apart at equal distance from each other. The linear actuators connect the base platform with a rotatory joint (1 DOF) and the motion platform with swivel joint (2 DOF) to satisfy the geometric requirement to actuate the leveling platform.

DOF = Degree of Freedom



The programmable lead screw actuated self-leveling platform (PLSASLP) is developed to provide a self-leveling and load bearing foundation required by various autonomously operated planetary surface robotic or deployable systems. PLSASLP is capable of self-leveling from a 15-degree offset to accommodate the landing slope tolerance found on most landers designed to land on the surface of the Moon or Mars.

PLSASLP is based on a kinematic geometry model that restricted all undesired motions between the two triangular platforms to keep the PLSASLP stiff. Global rotation and translation is achieved with the only motions that are authorized by the actuators and joints formation.



Two-Actuator Configuration

Three-Actuator Configuration

