



Third Laureate Innovation



- ◆ **Project Title:** Design and Manufacturing Machine Tools for Processing Satellite Boom Deploying Systems
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Abstract:

Using attitude control systems is one of the requirements for designing satellites. Such systems are used for two objects including stabilizing a desired attitude and performing control maneuvers for attitude improvement

Gravity Gradient Boom (GG-Boom) is one of the attitude control systems used for low earth orbit (LEO) satellites. This system is suitable for target precision below 15 degrees in exactness. GG-Boom has several kinds that one of its consumable categories is Tubular Boom. This category is constructed as a tubular spring that rolled on a pulley first and deployed at the length of some meters in primary levels of stationing satellite in orbit.

In this research and plan, has invented a kind of machine tools for processing 630cm-tubular spring in length as the spring of tubular booms. For manufacturing of this boom, a method as tension and bending has been used to bring about work hardening on metal surface.

This machine tools processing leads to positioning I. R. of Iran in ranking of countries able to manufacture such kinds of booms.