Precision Pointing

Innovative GN&C solutions for scientific instrument and laser communication system pointing, tracking, and stabilization are sought. Proposals that exploit and combine recent advances in attitude determination and control, lasers, advanced electro-mechanical packaging are encouraged. Proposed NASA science missions provide applications with pointing accuracies of 3 microradians or less with jitter of 30 nanoradians or less.

Formation Flying

Novel approaches to autonomous sensing and navigation of multiple distributed space platforms are sought. Of particular interest are sensing systems for formation, relative navigation and attitude. Proposed NASA science missions provide applications with relative range accuracies of 1 cm or less over formation scales of several km.

Low Impact Sensors and Actuators

GN&C sensors and actuators such as Sun sensors, Earth sensors, star/celestial object trackers, fine guidance sensors, gyroscopes, accelerometers, magnetometers, reaction/momentum wheels, control-moment gyros, magnetic torquers, tethers, attitude control thrusters, etc are sought. Of particular interest are technologies that will provide a sensing or actuation function, having performance (e.g., dynamic range, stability, accuracy, noise, sensitivity, bandwidth, control authority, etc.) consistent with the state-of-the-art, but with significantly reduced impact (mass, power, volume, and cost) to the host spacecraft. These resource reduction improvement factors should be quantified in the proposal and show a minimum factor of 2 with a goal of 10 or greater.