METHOD FOR AUTONOMOUS ORBIT CONTROL AND SATELLITE CONFIGURED TO IMPLEMENT THE METHOD

Technological advantages

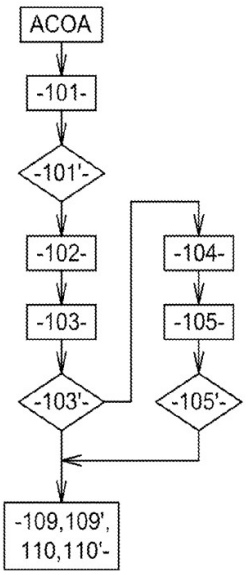
- More autonomous satellites for the station-keeping and for the collision avoidance using algorithms based on temporal analysis.

Invention synthesis

The invention relates to the onboard orbit control for the station-keeping and for the collision avoidance.
The system uses a previous maneuver plan in a previous prediction horizon that may hold a previous maneuver plan for avoidance. For a trajectory corresponding to a new maneuver plan, the collision risks are identified. As long as the risk is lower that a predetermined threshold, the maneuver plan is transmitted to the propulsion and attitude systems. Else, a new maneuver plan is computed to identify a new trajectory taking into account the previous man-oeuvre plan. This time iterative procedure allows for the continuous adaptation of the maneuver plans according to the predetermined risks.

Potential applications

- All satellites in orbit.
- Especially suited to satellites in low orbit.



Time line schematic for the activation of an autonomous orbit control (ACOA)

(101) Selection of the previous maneuver plan (PPMA)
(101') Checking the PPMA content
(102) Development of a maneuver plan on a prediction horizon
(103) Identification of a recognized risk for that trajectory
(103') Checking for the risk level
(104) Development of a new maneuver plan on the prediction horizon
(105) Development of a new maneuver plan and of a new trajectory
(105') Checking for the risk level
(110) Transmission of the new maneuver plan to the propulsion & attitude systems

Commercial benefits

- Satellite autonomous for its orbit control and the collision risk management.
- Less interventions for the ground segment during the operational exploitation.

Patented invention - under license.

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