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Modelling and Risk Analysis (2)

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HOW AN AWARE USAGE OF THE LONG-TERM DYNAMICS CAN IMPROVE THE LONG-TERM
SITUATION IN THE LEO REGION**Abstract**

The ReDSHIFT H2020 European project has shown, among other findings, that passive disposal procedures can benefit from the exploitation of dynamical perturbations. In particular for the LEO region, a natural eccentricity growth can be leveraged in order to reenter to the Earth's atmosphere at a lower Δv -budget. Depending on the perturbation, it can be possible also to reduce the deorbiting time. The numerical cartography of the region has been proven from a theoretical perspective, on the basis of a frequency analysis focused on solar radiation pressure and lunisolar perturbations and on dynamical systems theory tools.

In this talk, we will summarize the whole study concerning the dynamics which characterizes the LEO region in the long-term, by giving a comprehensive picture of the theoretical findings together with their possible exploitation for the debris mitigation.

With a specific long-term modelling of the future launch traffic, we will show how the deorbiting corridors represent concretely an opportunity to enhance the end-of-life deorbiting and limit the population growth, in particular for high-altitude spacecraft.

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