Optimising the science orbits for the Joint Europa Mission (JEM).

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JEM (a proposed NASA-ESA Joint Europa Mission) will be assigned the following overarching goal: Understand Europa as a complex system responding to Jupiter system forcing, characterize the habitability of its potential biosphere, and search for life in its surface, sub-surface and exosphere.

The JEM observation strategy to address these goals will include measurements on a high-latitude, low-latitude Europan orbit providing a continuous and global mapping of planetary fields (magnetic and gravity) and of the neutral and charged environment during a period of three months, which will itself follow a sequence of science operations in halo orbit around the L1 Lagrangian point of the Europa-Jupiter system which will also be used to relay the data from the JEM lander.

We will present a detailed mission analysis study by which the two successive sequences of science orbits have been optimized to best cover the JEM scientific objectives while satisfactorily fulfilling the mission constraints related to the lander delivery and relay functions.