Improvement of selenodetic parameters by differential VLBI of radio sources in SELENE and estimation of density of the lunar core

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VLBI RADio sources (VRAD) mission, which is one of the selenodetic missions in SELENE, measures angular distances between two radio sources around the moon and quasers by differential VLBI and improves accuracy of selenodetic parameters particularly spherical harmonics of the lunar gravitational field by one or two orders.

VRAD mission can obtain the lunar moment of inertia with an accuracy better than 0.1by improving the values of the second degree spherical harmonics of the lunar gravitational fields C20 and C22.

Improved value of the lunar moment of inertia with 0.1accuracy can put a

constraint on the density of the lunar core with 150ncertainty if we know the mean crustal density with 3accuracy and if we know the radii of the crust-mantle and the core-mantle boundaries.