

**Deformation and linearments feartures on icy crust of Europa under diurnal tidal force**

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The linearments structures observed on the surface of the icy moon Europa, one of the Galilean stellites of the Jupiter, reported by the Voyagers and Galileo spacecraft are curious subject from viewpoint of pattern formation.

The internal structure of the Europa is considered to be comprised of an ice crust overlying a liquid or solid ocean, and the linearments structures are formed by the cracks and some tectonic processes of the crust.

Among the network of the global scale linearments there are so called cycloidal cracks, i.e., periodic chains of arcuate linearments having from tens to hundreds km length. These linearments features including arcuate and non-arcuate provide several unsolved problems concerning to the development and the formation mechanism.

Our goal is to realize the formation process of the arcuate linearments by numerical simulations using a mathematical model of the structure of icy crust of the satellites and make a consistent scenario of their development.

We assume that the main driving force of the formation are the diurnal tidal force by Jupiter with 85 hours period, aand we adopt a spheric visco-elastic spring-beads model with fracture condition. We analyze the deformation and crack formation of the two dimensional visco-elastic shell under a periodic external force.