

Thermal history of satellites' core and possibility of dynamo action

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Intrinsic magnetic field is generated in not only the planets but also the satellites. Galileo spacecraft has discovered Ganymede's strong magnetic field. This field is considered to be originated by self-excited dynamo in Ganymede's metallic core. On the other hand, Europa does not have large intrinsic magnetic field even though many tectonic features implying endogenic activity exist on the surface. Considering that the terrestrial Moon that has same size as the rock-metal interior of Ganymede and Mars that is larger than Ganymede are inactive and endogenic activity ceased in very early stage, present Ganymede seems to be in especially warmer state. However, origin of diversity in these thermal histories is unknown.

We perform numerical simulation about thermal history of the core in the satellites, and evaluate the temperature in the metallic core and the driving of dynamo action.