



## **Comparison of supercritical and subcritical dynamos and the consequences on Martian magnetism**

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Our numerical simulation of Martian dynamo indicates that the historical Martian dynamo could exist in a small subcritical domain (defined by the Rayleigh number lower than the critical point to excite a dynamo by convection in Martian core). This subcritical domain varies with the inner core dimension. To better understand the differences between the subcritical and subcritical dynamos, and their implications to Martian remnant magnetic field, we have analyzed in detail the properties of the magnetic fields, the convective flow patterns and the force balances in the outer core. Our results show distinct features between the two kinds of dynamos, in both spatial and temporal patterns, and in the dynamo regions (where the magnetic field is generated).