

Revisiting capture origin of Martian satellites: Effects of rotating proto-Martian atmosphere

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Two small satellites (Phobos and Deimos) are orbiting Mars on the Martian equatorial plane with nearly circular orbit. Two leading hypotheses for origin of Martian satellites have been discussed so far; capture origin and giant impact origin. Spectral features of Phobos and Deimos are similar to C-type or D-type asteroid, which supports capture origin, while their orbital features (especially low inclinations) do not support capture origin, but support giant impact origin. Here we focus on capture origin, and examine the effect of rotating proto-Martian atmosphere on damping their inclination via gas drag. We reexamine the possibility for capture origin.