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What we have learned about the internal structure of Mars

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Mars has long been a target of exploration missions. Now we know the size and mass of Mars, that Mars has rarefied atmosphere and seasons, that Mars has obvious north-south dichotomy, and that Mars has the largest volcano in the solar system at the equator region. Then, what have we learned about internal structure of Mars?

The bulk density of Mars means that there is a dense core at the center of Mars. On the other hand Mars does not show intrinsic magnetic field, which means no vigorous convection in the core. According to the observation of gravity and topography the crustal structure of Mars shows contiguous thickening from north to south, which means long wave length mantle dynamics. The large volcanoes should have been supported by superplume.

In this talk, I will review what we have learned about the internal structure and thermal evolution model of Mars, and discuss what should be observed next to unveil the interior and history of Mars.

Keywords: Mars, internal structure, thermal evolution, mantle dynamics