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Is The Origin of Martian Magnetic Anomalies Linked to a Giant Impact?

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This study aims to identify if and which of the largest impact basins on Mars (Borealis, Argyre, Hellas, Isidis, Utopia) could be involved in the genesis of magnetic anomalies through intrusive or hydrothermal processes or impact ejecta magnetization. We used a filtered radial component of the magnetic field (>200 nT) to classify the anomalies as circumferential, radial, or randomly oriented with respect to the impact basin centers. We then assessed whether the proportion of the circumferential and radial anomalies exceeded the proportion for a random distribution. We found that crustal processes following the Borealis impact are a plausible source for some of the magnetic anomalies. Other impacts may have contributed as well.