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Search for metallic asteroids

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Metal asteroids are lurking somewhere in the asteroid belt, concealing a source of extraterrestrial resources, presenting a danger to life on Earth, and holding keys to the early history of the Solar System.

We know their existence for sure as their fragments are regularly falling on the Earth's surface as iron meteorites.

We understand how metal asteroids originated at the molten interiors of planetesimals during the first few million years of the Solar System's history and later were liberated in planetesimal collisions.

But by and large, we still cannot point out particular asteroids and say with certainty that they are metallic.

How could we? Should we study their spectra? Colors? Albedos? Radar albedos? Thermal properties? Could we do the impossible and measure their densities?

I will review the status of the search for metal asteroids and try to persuade you that the present-day negative results can conceal neither the beautifully rich physics of asteroids nor the scent of shortly approaching discoveries.

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