

# DENSE HYDROGEN IS ASTRONOMY: WHY IS IT ENIGMATIC?

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Hydrogen is the most abundant chemical element in the Universe, and it has the simplest structure. Atomic hydrogen contains just one proton and one electron. It would therefore be expected that the behavior of hydrogen under high pressure can be easily studied and predicted theoretically. In reality, this is far from being the case.

The research aiming to determine the metallisation pressure of hydrogen spans a period of 85 years, and the problem can not yet be considered as closed. The first attempt to determine the pressure of metallisation of hydrogen was made by Wigner and Huntington in 1935, and the last reported claim dates from the spring of the current year. Results, obtained by various authors and different methods give for the pressure of metallization a value between 3 and 4.25 Mbar.

This paper has a double aim: to introduce the “non-physicist” readers to the enigma of metallization of hydrogen by discussing in some detail a few recent studies, and to show what purely astronomical consequences would the metallization of hydrogen have for theoretical work on modelling of the giant planets.

## References

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