Investigation of the possibility of determining the concentration of heavy element impurities in hydrogen plasma by spectroscopic methods

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This work proposes the application of spectroscopic diagnostics for investigating low-temperature hydrogen plasma containing heavy element impurities. The concentration of these impurities is determined through analysis of the H_β spectral line profile. The calculations of the line profiles incorporate the effect of ion thermal motion on Stark broadening [1, 2]. The results have been verified against existing experimental data [3].

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[2] Letunov A Y, Lisitsa V S, Loboda P A and Novikov A A 2024 *JETP Letters* **120** 118–124
[3] Wiese W L, Kelleher D E and Helbig V 1975 *Physical Review A* **11** 1854–1864