

Erratum 2 of the "Proposal of a Deuterium-Deuterium fusion reactor intended for a large power plant" article

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Complement to the abstract

The standard way to heat the plasma, so as to stabilize the plasma temperature, is to use devices such as neutral atoms/molecules injection, but also radio frequencies (ECRH or ICRH), etc. This set of plasma heating systems is replaced, in this document, by two opposite beams of D⁺ ions and electrons injected by ions and electrons beam guns, even if in reality these beams could not reach the plasma core as the magnetic confinement would prevent it.

Now the injection of neutral atoms/molecules at high energy would be more or less equivalent because these particles are mainly ionized at the center of the plasma and give their kinetic energy in excess to the plasma. The advantage is that these neutral particles are not confined by the magnetic field, so they can enter into the plasma core. Moreover, two opposite beams permit to avoid a net plasma current. However, in that case, the kinetic energy is mainly carried by the sole D⁺ nuclei, not by the electrons.

So in this document, it must be implicitly considered that the D⁺/Electrons injection is in fact an injection of neutral Deuterium which is going to be ionized in D⁺/Electrons before reaching the center of the pipe.

Now, for the calculations, considering two ionized beams instead of two neutral beams would not change the results, even if the difference of kinetic energy between ions and electrons would logically change the behavior of such particles in the plasma. However, the physics used in this paper being relatively simple, it is not targeted accurate results but orders of magnitude.

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5. References

[2] Lindecker, P. (2023) Proposal of a progressive thermalization fusion reactor able to produce nuclear fusions with a mechanical gain superior or equal to 18 - Rev B Zenodo DOI 10.5281/zenodo.15068701 Available at: <https://zenodo.org/records/15068701>