

## P4.1082 3D finite element modelling of ICRH in JET

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See the full abstract here:

<http://ocs.ciemat.es/EPS2019ABS/pdf/P4.1082.pdf>

We have assessed the possibility of using the finite element method to solve the electromagnetic wave equation in a fusion plasma in 3D for ICRH applications. In particular, we have studied on-axis hydrogen heating and second harmonic deuterium heating. The purpose of this code is to develop a 3D model with more realistic antenna and wall geometry. A projection of the 3D wave field onto a poloidal plane is compared to the 2D wave field produced by the FEMIC code for validation. The comparison was made with good results. The coupling resistance of the 3D model is compared to the coupling resistance of a 1D analytic model, with some discrepancies, since the model of the coupling resistance does not properly take the current induced into the reactor wall into account. The agreement of the coupled power however, is good. Future work includes taking the wall currents into account when computing the coupling resistance, and integrating the 3D analysis with FEMIC.

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