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EX/2-4: Dependence of Heat Transport and Confinement on Isotopic Composition in Conventional H-mode Plasmas in JT-60U

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Dependence of heat transport on isotopic composition is investigated in conventional H-mode plasmas for the application to ITER. The identical profiles of electron density, electron temperature and ion temperature are obtained for hydrogen and deuterium plasmas while the required power becomes clearly larger for hydrogen, resulting in the reduction of the heat diffusivity for deuterium.

The result of the identical temperature profiles in spite of different heating power suggests that the characteristics of heat conduction differs essentially between hydrogen and deuterium even at the same scale length of temperature gradient. On the other hand, the edge stability is improved by increased total poloidal beta regardless of the difference of the isotopic composition.

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