

LH wave coupling over ITER-like distances at JET

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Lower hybrid current drive is the most efficient way of driving off-axis current in plasma. A key question for the use of LH on future devices is the coupling of the waves over a large plasma-wall distance and during ELMs. This should be demonstrated on present machines.

In recent JET experiments, the plasma-launcher distance was increased up to ITER-relevant distances of 15cm. Both high triangularity and low triangularity configurations were used. Good coupling of 3.2 MW LH power with an averaged reflection coefficient $R_c = 4\%$ was achieved using gas puffing near the launcher. Reciprocating Langmuir probes show higher saturation current when near-gas injection is used. Strong indications are seen that LH power plays a role in gas ionization: 1 MW of LH power was not enough for good coupling while 2 MW was. A fraction of power is lost in the far scrape-off layer ending up on walls magnetically connected to the grill region. For the first time on JET, quantitative measurements of the LH induced hot spots have been made. There are indications that the heating rate of the spot on the limiter depends on the LH power.