

**NEUTRAL BEAM SHINETHROUGH POWER  
AND IT'S DEPENDENCE ON THE LINE DENSITY  
OF THE DIII-D PLASMA\***

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Neutral beams are the primary source of auxiliary plasma heating in the DIII-D tokamak. Part of the beam power passes through the plasma and is deposited on the wall of the tokamak (shinethrough power) and does not contribute to plasma heating. It is therefore crucial to know the shinethrough power in order to give an accurate account of the total power deposited in the plasma. We have recently remeasured the shinethrough power using data taken from thermocouples embedded in the beam target tiles of the tokamak vessel. This data was then analyzed with a new more detailed model to achieve better understanding of the functional dependence than available previously. The tile temperature rise was correlated to the injected beam power. A dependence of the tile temperature rise on the initial tile temperature has been empirically measured and accounted for in order to obtain a more accurate determination of the shinethrough beam power. Measurements of the shinethrough beam power as a function of plasma density confirm that shinethrough power decreases exponentially with plasma density.

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