Measurement of the Gamma-Ray-to-Neutron Branching Ratio for the Deuterium-Tritium Reaction in Magnetic Confinement Fusion Plasma

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Recent results from the JET DTE2 and DTE3 deuterium-tritium campaigns demonstrate the feasibility of measuring fusion yield through absolute counting of two less frequently emitted gamma rays from the deuterium-tritium reaction. This approach offers a neutron-independent method for measuring deuterium-tritium yield in future fusion reactors. It also shows potential for measuring fusion yield in aneutronic reactions, such as deuterium-helium-3 and proton-boron, expanding its application across a broader range of fusion processes.