

## ABSTRACT

Strong shaping, favorable for stability and improved energy confinement, together with a significant expansion of the central region of improved confinement in negative central magnetic shear target plasmas, increased the maximum fusion power produced in DIII-D by a factor of 3. Using deuterium plasmas, the highest fusion power gain, the ratio of fusion power to input power, ( $Q$ ) was 0.0015, corresponding to an equivalent  $Q$  of 0.32 in a deuterium-tritium plasma, which is similar to values achieved in tokamaks of larger size and magnetic field. A simple transformation relating  $Q$  to stability parameters is presented.