

Abstract Submitted
for the DPP98 Meeting of
The American Physical Society

Sorting Category: 5.1.1.2 (experimental)

Progress Toward Sustainment of Advanced Tokamak Modes in DIII-D¹ B.W. RICE, T.A. CASPER, B.W. STALLARD, Lawrence Livermore National Laboratory, J.C. DEBOO, J.R. FER-
RON, C.M. GREENFIELD, R.J. LA HAYE, T.C. LUCE, E.J. STRAIT,
T.S. TAYLOR, General Atomics — Results of recent DIII-D experi-
ments on the sustainment of Advanced Tokamak (AT) modes are pre-
sented. In negative central shear (NCS) discharges with an L-mode edge,
new plasma startup techniques were developed to increase the radius of
 q_{min} in an attempt to increase the ITB radius. Although MHD activity
prevented the formation of an ITB in many of these discharges, analysis
of discharges with an ITB indicate that the ITB remains localized in the
core ($\rho_{ITB} < 0.5$), where most of the beam power is deposited. These
same startup techniques have been applied to discharges with an ELMy
H-mode edge. The best results were obtained with monotonic q profiles
(non-sawtoothed) where $\beta_N H_{98hy} \sim 6$ was sustained for $\sim 1s$ during
type-I ELMs. The performance in these discharges was eventually de-
graded by neoclassical tearing modes triggered by ELMs or fishbones.
The impact of the current profile, edge pressure gradient, and Z_{eff} on
the sustainment of these modes will be presented.

¹Work supported by U.S. DOE Contracts W-7405-ENG-48, DE-AC03-
89ER51114, and DE-AC05-96OR22464.

☒ Prefer Oral Session
☐ Prefer Poster Session

B.W. Rice
rice@gav.gat.com
Lawrence Livermore National Laboratory

Special instructions: DIII-D Oral Session I, immediately following Stambaugh
--

Date submitted: July 16, 1998

Electronic form version 1.3