ECRH in He in support of the preparations for JT-60SA operation.

Experiments on exhaust physics have focused particularly on detachment, a necessary step to a DEMO reactor, in a comprehensive set of conventional and advanced divertor concepts. The specific theoretical prediction of an enhanced radiation region between the two X-points in the low-field-side snowflake-minus configuration was experimentally confirmed. Fundamental investigations of the power decay length in the scrape-off layer (SOL) are progressing rapidly, again in widely varying configurations and in both D and He plasmas; in particular, the double decay length in L-mode limited plasmas was found to be replaced by a single length at high SOL resistivity. Experiments on disruption mitigation by massive gas injection and electron-cyclotron resonance heating (ECRH) have begun in earnest, in parallel with studies of runaway electron generation and control, in both stable and disruptive conditions; a quiescent runaway beam carrying the entire electrical current appears to develop in some cases. Developments in plasma control have benefited from progress in individual controller design and have evolved steadily towards controller integration, mostly within an environment supervised by a tokamak profile control simulator. TCV has demonstrated effective wall conditioning with ECRH in He in support of the preparations for JT-60SA operation.

Overview of the TCV tokamak program: scientific progress and facility upgrades

The TCV tokamak is augmenting its unique historical capabilities (strong shaping, strong electron heating) with ion heating, additional electron heating compatible with high densities, and variable divertor geometry, in a multifaceted upgrade program designed to broaden its operational range without sacrificing its fundamental flexibility. The TCV program is rooted in a three-pronged approach aimed at ITER support, explorations towards DEMO, and fundamental research. A 1 MW, tangential neutral beam injector (NBI) was recently installed and promptly extended the TCV parameter range, with record ion temperatures and toroidal rotation velocities and measurable neutral-beam current drive. ITER-relevant scenario development has received particular attention, with strategies aimed at maximizing performance through optimized discharge trajectories to avoid MHD instabilities, such as peeling-ballooning and neoclassical tearing modes. Experiments on exhaust physics have focused particularly on detachment, a necessary step to a DEMO reactor, in a comprehensive set of conventional and advanced divertor concepts. The specific theoretical prediction of an enhanced radiation region between the two X-points in the low-field-side snowflake-minus configuration was experimentally confirmed. Fundamental investigations of the power decay length in the scrape-off layer (SOL) are progressing rapidly, again in widely varying configurations and in both D and He plasmas; in particular, the double decay length in L-mode limited plasmas was found to be replaced by a single length at high SOL resistivity. Experiments on disruption mitigation by massive gas injection and electron-cyclotron resonance heating (ECRH) have begun in earnest, in parallel with studies of runaway electron generation and control, in both stable and disruptive conditions; a quiescent runaway beam carrying the entire electrical current appears to develop in some cases. Developments in plasma control have benefited from progress in individual controller design and have evolved steadily towards controller integration, mostly within an environment supervised by a tokamak profile control simulator. TCV has demonstrated effective wall conditioning with ECRH in He in support of the preparations for JT-60SA operation.
Web of Science (2017): Impact factor 4.057
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BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.62 SJR 1.284 SNIP 1.416
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BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 1.88 SJR 1.51 SNIP 1.62
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 2.2 SJR 1.907 SNIP 1.667
Web of Science (2014): Impact factor 3.062
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 1.83 SJR 1.366 SNIP 1.516
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ISI indexed (2013): ISI indexed yes
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Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): CiteScore 3.78 SJR 2.043 SNIP 2.433
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Scopus rating (2008): SJR 2.031 SNIP 1.736
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Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 1.885 SNIP 1.932
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 2.647 SNIP 1.673
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 2.215 SNIP 1.673
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 3.275 SNIP 1.409
Scopus rating (2001): SJR 2.159 SNIP 2.173
Web of Science (2001): Indexed yes
Scopus rating (2000): SJR 1.843 SNIP 1.104