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Status and Plans on MAST-U

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MAST Upgrade, the centre piece of the UK fusion research programme, is expected to be operational by the end of 2017. Its three primary objectives are: 1) development of novel exhaust concepts, 2) contribution to the knowledge base for ITER and 3) to examine the feasibility of the spherical tokamak as a fusion Component Test Facility.

As with most tokamaks, the design and construction of the MAST Upgrade facility has thrown up many engineering challenges, some predictable, some unforeseen. A number of these will be presented including the design of large modular structures for assembly to tight tolerances; methodologies for high-precision magnetic alignment of the 20+ PF coils; the design of a highly flexible divertor with a wide range of diagnostics, configurations and strike point locations; and the extension of the operating limits of copper coil technology to maximise plasma current, TF field and pulse length.

As well as the design challenges, numerous project management and systems engineering lessons have been learned in the fields of planning, estimation, team structure, requirements management, configuration control and many others. Some of the most useful and relevant of these lessons will be shared in the hope that other projects may benefit from findings in common areas of interest.

Finally, with a first campaign now imminent, a summary of some of the near term scientific goals, unique diagnostics capabilities and research opportunities will also be presented.

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Eligible for student paper award?

No

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