

Progress on ITER diagnostics

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Approximately 50 diagnostics will be installed on ITER, distributed in 20 ports, on the vacuum vessel surface, and in the divertor. These diagnostics will measure more than 100 parameters. Many diagnostic projects are now moving forward, with number of components being already delivered to ITER site and installed. The diagnostics on ITER will be subject to new challenges unprecedented in today's tokamaks. The diagnostics will operate in a nuclear environment which requires to mitigate the transmutation, radiation damage, and thermo-electric effects, as well as to cope with nuclear heating. The diagnostics will be subject to very limited or no maintenance, and they need to be designed with high reliability and/or redundancy. This contribution will describe how these challenges are successfully met through standardization, quality control and dedicated R&D. The contribution will also outline the design of the diagnostic ports, engineered to accommodate several diagnostic systems whilst maximizing the nuclear shielding performance and respecting the weight limit. The recent progress on the prototypes, manufacture, and installation of the ITER diagnostics towards Start of Research Operation will be presented.