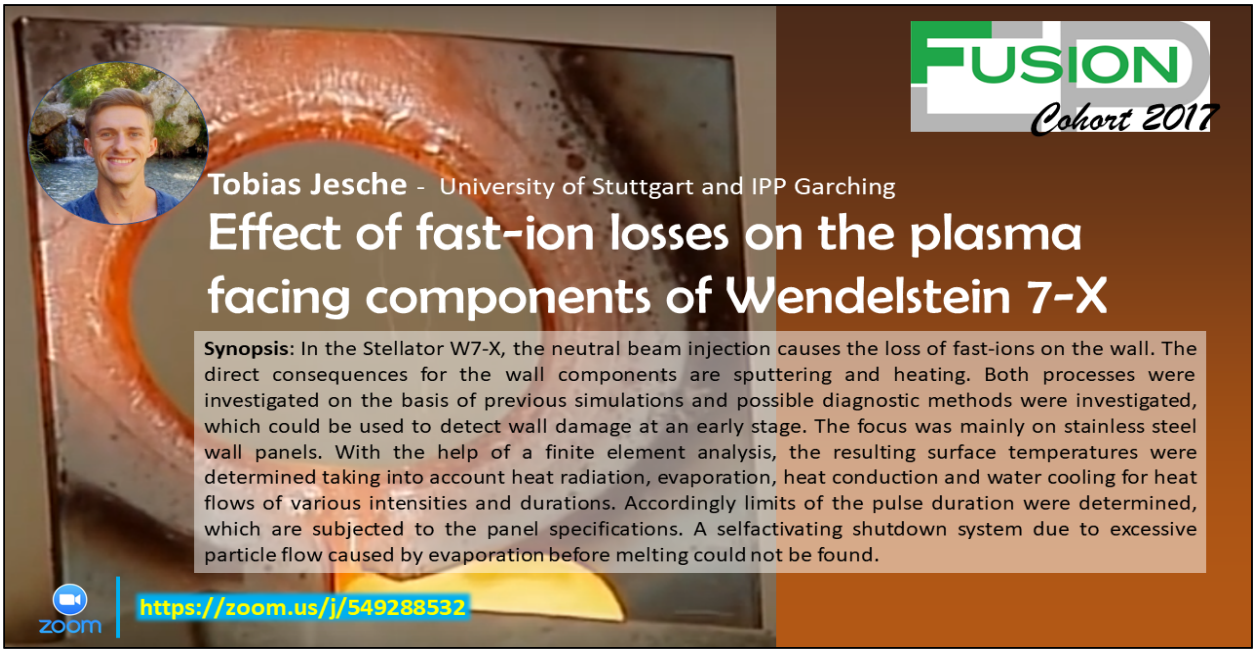

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Title: Effect of fast ion losses on the plasma facing components of W7X

Speaker: Tobias Jesche (MSc candidate, Stuttgart University, Germany)

When: 2019-01-24 20:00:00

Abstract: In the Stellarator W7-X, the neutral beam injection causes the loss of fast-ions on the wall. The direct consequences for the wall components are sputtering and heating. Both processes were investigated on the basis of previous simulations and possible diagnostic methods were investigated, which could be used to detect wall damage at an early stage. The focus was mainly on stainless steel wall panels. With the help of a finite element analysis, the resulting surface temperatures were determined taking into account heat radiation, evaporation, heat conduction and water cooling for heat flows of various intensities and duration. Accordingly limits of the pulse duration were determined, which are subjected to the panel specifications. A self-activating shutdown system due to excessive particle flow caused by evaporation before melting could not be found.

Email: fusionep-talks@egyplasma.com

Website: fusionep-talks.egyplasma.com