**ABSTRACT**

- ERO2.0 is a simulation code for Plasma-Surface-Interaction and Impurity Transport modelling.
- The code was successfully validated using JET ITER-like Wall experiments.
- Predictions for the beryllium (Be) first wall erosion and transport were performed for ITER.
- The parameter study: variation of plasma species, SOL density, temperature and flow velocity, magnetic configuration, heating power.

**MOTIVATION**

- Steady-state erosion of plasma-facing components (PFCs) reduces wall lifetime and produces impurities.
- Impurities may lead to enhanced retention, radiative collapse, core plasma dilution, dust formation.
- Simulation tools for erosion and impurity transport are required → ERO2.0 (Fig. 1) is a massively-parallel, 3D Monte-Carlo code designed for such tasks.

**VALIDATION OF ERO2.0 AT JET ITER-LIKE WALL**

- JET ITER-like Wall (ILW): same Be/W environment as in ITER → ideal test bed for PSI and impurity transport codes.
- First ERO2.0 application: JET limiter plasma (contact point on inner limiter) leading to strong Be erosion.
- Good agreement between synthetic and experimental spectroscopic images from wide-view cameras (Fig. 2a), including shadowing patterns.
- Parameter study: fueling scan (leading to local Te variation between ~5-35 eV) showed that the so-called "ERO-max" assumption (clean Be surface) gives good results at ~35 eV, while "ERO-min" assumption (50% D inside Be surface) gives good results at ~5-10 eV (→ less D outgassing).
- Extension to diverted plasmas: at different NBI power (Fig. 2b), reasonable agreement achieved with "ERO-min" due to the lower temperatures (~5 eV).

**CONCLUSIONS**

- The ERO2.0 code is a valuable tool for 3D simulations of global erosion and redeposition, successfully validated at JET ILW.
- ITER simulations show high Be erosion at the apex → can be improved by lower triangularity.