

# Particle balance investigation with the combination of rate equations of hydrogen state and hydrogen barrier model in long duration discharges on all-metal PFW QUEST

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Out-flux of fuel particles from plasma-facing walls (PFWs) during long duration discharges on all-metal PFW QUEST is in agreement with a prediction of the hydrogen (H) barrier model we proposed [1]. A simple calculation based on the combination of rate equations of H state and the H barrier model predicts a significant impact in the response of plasma density. This result indicates that a proper wall model including the effect of deposition layer that creates H barrier should be developed even in all-metal PFW devices.

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