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P3.131 Direct numerical simulation of coolant water flow in plasma facing component

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The simulation plays an important role to estimate characteristics of cooling in plasma facing components such as blanket and divertor. An objective of this study is to perform large-scale direct numerical simulation (DNS) on heat transfer of turbulent flow on coolant water flow. The coolant flow conditions in plasma facing components are assumed to be Reynolds number of a higher order. To investigate the effect of Reynolds number on the scalar structures, the Reynolds numbers based on a friction velocity and a pipe radius were set to be $Re_{\tau} = 2100$ and 3150 . The detailed turbulent quantities such as the mean flow, turbulent stresses, turbulent kinetic energy budget, and the turbulent statistics were obtained.

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