In the last two years, through the international joint experiments of EAST, W7-X and LHD, the research of 3D edge physics and its application in active control of divertor flux redistribution have all made great progress. It turns out that the synergy between 3D magnetic topology and edge plasma transport may provide a new means for heat-flux control, which is a key issue for next-step fusion development. This work has been carried out within the framework of the EUROfusion Consortium and has received funding from the Euratom research and training programme 2014-2018 and 2019-2020 under grant agreement No 630335. The views and opinions expressed herein do not necessarily reflect those of the European Commission.

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