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Characterization of magnetic configurations of planar-axis stellarators LHD and CHS in terms of the boundary shape SHOICHI OKAMURA, National Institute for Fusion Science — A series of plasma confinement experiments with two stellarator/heliotron devices CHS and LHD in NIFS, Japan has been demonstrating experimental results largely contributing to the magnetic fusion research. The most important result in the physics study was the experimental demonstration of the zonal flow measurements conducted in CHS device. High performance results in LHD device are the stable plasma operation with 5% beta and the achievement of very high-density plasmas well above the equivalent Greenwald limit. CHS and LHD are classified in the planar-axis stellarators, which were designed by tuning parameters of helical coils and a small number of poloidal coils. Because a new trend of the advanced stellarator design is the tuning of configurations based on the boundary shape, the same analyses of magnetic configurations used in CHS and LHD experiments are necessary for the comprehensive understandings of stellarator experiments including non-planar-axis ones. This paper presents comparisons of various configurations of CHS and LHD from the common point of view of the boundary shape analysis.

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