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**Influence of the poloidal phase difference of antenna current on eigenmodes and power absorption in the ion cyclotron range of frequencies** SUWON CHO, Kyonggi University, JONG-GU KWAK, Korea Atomic Energy Research Institute — The load resilient antenna utilizing the conjugate T matching method is known to be effective in the rf power coupling for ELMy plasmas. Contrary to the conventional antenna, the load resilient antenna can have the phase difference of the current between the two straps above and below the equatorial plane, which may affect the heating efficiency. In this work, effects of the phase difference are examined using the full wave simulation code TORIC. It is found that the poloidal phase difference can cause eigenmodes to appear at different toroidal mode numbers and it influences power absorption especially large when distinct eigenmode modes are excited. They can exist over the entire range of the toroidal mode number when the density is relatively low and can exist at either very low values or high values of the toroidal mode number otherwise. As the density increases, distinct eigenmodes at particular toroidal mode numbers disappear smoothing the power absorption spectrum except for a few lowest toroidal mode numbers and interference due to the poloidal phase difference generally leads to weak power absorption over the broad range of the toroidal mode number.

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