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## Asymmetry in wireless power transfer between a superconducting coil and a copper coil

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Wireless power transfer (WPT) is of increasing interests today. HTS (high temperature superconducting) WPT has been demonstrated to be more efficient than copper WPT. In our previous work, the efficiency of WPT from a copper coil (as the transmitting coil) to a HTS coil (as the receiving coil) is lower than the efficiency of WPT from the same HTS coil to the same copper coil. Namely, asymmetry exists and degrades WPT performance. In this paper, it is demonstrated theoretically and experimentally that, for WPT between a HTS coil and a Litz coil: asymmetry does exist and influence properties; the root of the asymmetry is the different resistances between the HTS coil and the Litz coil; the effects of the asymmetry can be eliminated by optimizing the load; the proposed theoretical calculation fit the experimental results well.

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