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Development of an octupole ceramics chamber with integrated pulsed magnet for beam injection

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An air-core pulsed magnet named Ceramics chamber with integrated Pulsed Magnet (CCiPM) was developed as a fast dipole kicker at first. A prototype of a dipole CCiPM was designed and tested successfully at KEK Photon Factory (KEK-PF). Because of the feature of an air-core magnet, a CCiPM can also generate an octupole magnetic field for pulsed multipole magnet injection. Compared with the pulsed iron-core magnet, the CCiPM almost does not have eddy current effects which may induce the stored beam oscillation. One prototype has been developed for the beam injection at PF ring. To examine the performance of the octupole CCiPM, some experiments has been conducted such as durability test, current excitation test and magnetic field measurement to evaluate the mechanical performance and magnetic field quality. The design and experimental results will be reviewed.

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Footnotes

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Yes

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