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## **Tue-Mo-Po2.04-09 [23]: Optimization of the compression coil configuration in magnetic trap type magnetic compression device**

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The design of the compression magnet in the magnetic trap type magnetic compression device has an important influence on the compression effect. Due to the large diameter (0.3m) of the vacuum chamber, and the severe eddy current in the metal cylinder induced by the rapidly changing current (700-1100kA/100 $\mu$ s) of the coil, the radial distribution of the magnetic field in the magnetic mirror region is very uneven. In order to produce a more uniform magnetic field configuration in the vacuum chamber, the quantity, size and position of the coils are optimized. Based on the experimental model and results from a compression magnet with multiple coil sets, it was shown that the configuration with more coil sets, closer distance between coil and vacuum chamber, and smaller size, will have more homogeneous magnetic field generated by the compression magnet. In this paper, a technical design scheme of compression magnet coils is proposed. The compression magnet adopts 9 coil groups, and each group has two coils connected in parallel, which can significantly improve the uniformity of the magnetic field and meet the engineering application requirements.

Key word: compression coil, magnetic trap type, magnetic compression, coil optimization

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