



## **The SEP signature in the shock-MC structures**

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Shen et al. (2008) reported that the high energy particle events might enhance obviously in the shock-MC (magnetic cloud) complex structure. In their study, the enhancement of the solar energy particles (SEP) intensity is the main cause of the largest SEP event in solar cycle 23rd. In this work, we statistical analysis the SEP signature of all shock-MC complex structures observed by WIND from 1994 to the end of 2014. It is found that the SEP intensity enhanced in about half shock-MC complex events. It means not all the shock-MC structure can make the SEP intensity enhanced. To find out the possible criterion of such enhancement, the related parameters, such as the shock parameter and so on, are detailed compared. In addition, using our interplanetary coronal mass ejection list from 1994 to the end of 2014, we found that the enhancement of the SEP intensity in the ICME are mainly caused by the reason that a shock propagated into them.