

PEM029-15

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Estimate of coronal shock speed by solar radio observation and solar energetic particle transport

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Ground level enhancement (GLE) is caused by extremely energetic particles from the Sun. The origin of these extremely energetic particles are thought to solar flares or solar coronal shock waves although origins of solar energetic particles are still controversial. If energetic particles accelerated at a coronal shock wave cause GLE, a speed of the coronal shock wave will be an elementary parameter for predicting the energetic particle intensity and also GLE level.

The coronal shock waves have been detected by various observations, such as solar radio spectra, H-alpha images, EUV images, and X-ray images. The speed of coronal shock waves can be estimated by these observation data although it is not sure if these observations are counterparts of the same coronal shock waves. We will introduce a method to estimate a speed of coronal shock wave by using solar type 2 radio burst data obtained with HiRAS system at Hiraiso Solar Observatory, NICT. Moreover, a method for automatic detection of type 2 radio burst will be introduced briefly.

After particles were accelerated at solar flare or coronal shock waves, the particles are propagating from the Sun to the Earth. Particle transport is one of the most important topic for predicting particle intensity time evolution on the Earth. We will also introduce current status of solar energetic particle transport study briefly.

Keywords: Solar Energetic Particles, Solar Radio Bursts