ESTIMATIONS OF EFFECTIVE HEIGHT, SIZE AND BRIGHTNESS TEMPERATURE OF SOLAR CYCLOTRON SOURCES

A.N. Korzhavin, T.I. Kaltman

Special Astrophysical Observatory of RAS, Saint-Petersburg, Russia
arles@mail.ru

The modeling of microwave emission from a spot-associated cyclotron source was done to refine the method of estimations of effective brightness temperature, size and height above photosphere in the processing of RATAN-600 observations. The simple model of a source with a dipole distribution of magnetic field and with a two-step transition region between the cold dense chromosphere and the hot corona was used.

When a source approaches the limb the decrease of a source visible size in E-W direction takes place due to the projection effect, which causes the decrease of its effective size in processing of a one-dimensional scan of RATAN-600. The subsequent Gauss-analysis would overestimate values of brightness temperatures if necessary corrections were not done.

The same projection effect leads to the fact, that the size of source observed in polarized emission (Stokes parameter V) exceeds the size of the source in full intensity emission (Stokes parameter I) due to non circular distribution of polarized emission.

The method of estimates of the effective height of emission above photosphere level by measurements of an emission centre of weight declination from a source geometrical centre at approaching to the limb was modeled and presented.

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