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Evolution of the microwave inter-sunspot sources before strong flares

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Under this study we considered active regions of the 23-rd an 24-th cycle of solar activity which were observed with the 2D spatial resolution at two frequencies: 17 and 34 GHz with the Nobeyama Radioheliograph (NoRH) and we used daily solar observations with the RATAN–600. We detected appearance and rapid development of a compact microwave source above the neutral line of the magnetic field (NLS-source) one-two days or few (14–17) hours before the X-class flares. The position of this source associated with the place of the maximum of magnetic field gradient at the photosphere. A compact source (NLS) under 2D observations at NoRH is characterized by a shift of the centers of brightness in the polarization and intensity before powerful flare. In most cases the formation of δ-configuration of the magnetic field preceded the detection of NLS.

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