

## **Evidence of parametric resonance in microwave radio emission of coronal magnetic loops**

**V. Zaitsev**

Institute of Applied Physics RAS, Nizhny Novgorod, Russia ([za130@appl.sci-nnov.ru](mailto:za130@appl.sci-nnov.ru) / +78312160616 / +78312160659)

Investigation of microwave emission from solar active regions has for the first time elucidated the effect of parametric resonance between 5-minute velocity oscillations in the solar photosphere and oscillations of coronal magnetic loops modulating the microwave radiation. The effect is evident as synchronous excitation of 5-, 10- and 3-minute oscillations in the coronal magnetic loop. These periods correspond to pump-up frequency, sub-harmonic and the first upper frequency of parametric resonance. Since 5-minute photospheric oscillations are reflected from temperature minimum and cannot directly penetrate into the corona, the parametric resonance may serve as an effective channel for photospheric oscillation energy transfer to the upper solar corona. It opens an important perspective to understanding the coronal heating mechanism.