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The model calculations of Schumann eigenmode frequencies and possible changes during Solar proton events

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It is firmly established that during Solar proton events, the lower ionosphere boundary in polar caps is shifted downwards. The concentrations of ions and free electrons are also subjected to dramatic changes. These variations must have profound influence on Schumann eigenmode parameters (especially peak frequencies). In this contribution, the results of model calculations of the eigenmodes of Earth-ionosphere resonator are presented. These calculations were performed by self-developed code based on finite-element method; the inhomogeneities of the lower ionosphere conductivity were taken into account. The possible relations between changes in eigenmode frequencies and solar particle and X-ray fluxes were discussed (based partly on the Schumann resonance observations at Modra observatory.