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Acceleration of the ionospheric electrons by the powerful HF transmitter

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Most northern hemisphere countries develop a national scientific programs aimed at studying the properties and behavior of the ionosphere. The goal of this program is to further advance in knowledge of the physical and electrical properties of the Earth's ionosphere which can affect communication and navigation systems. The research facilities usually consist of two major subsystems: (1) the HF transmitter, and (2) the other scientific, observational instruments, such as UHF radar, ELF and VLF receivers, magnetometers, riometers, LIDAR, etc. A high power transmitter in the HF frequency range (1.5 - 10 MHz) is the main ionospheric research instrument (IRI). The IRI is used to temporarily excite a limited area of the ionosphere for scientific study. As a result an area of about 20 x 20 km2 , with the thickness of about 80 km at the altitude of 70 - 200 km is heated up to the great local temperature of about million degrees. In presentation we are going to answer on the question: what is the greatest energy of ionospheric electrons until they could be accelerated by electromagnetic radiation of power HF transmitter with parameters of Tromsoe (Norway) type.

Keywords: **acceleration**, **electrons**, **HF transmitter**, **ionosphere**, **electromagnetic waves**, **antennas**

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