

The High Frequency Active Auroral Research Program

HAARP

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Technical Information

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Questions of a technical nature may be submitted via e-mail to:
infohaarp@haarp.alaska.edu

The HAARP Ionospheric Research facility will be a major Arctic facility for conducting upper atmospheric research. The facility will consist of two essential parts:

1. A high power transmitter and antenna array operating in the High Frequency (HF) range. The transmitter is capable of delivering up to 3.6 million Watts to an antenna system consisting of 180 crossed dipole antennas arranged as a rectangular, planar array.
2. A complete and extensive set of [scientific instruments](#) for observation of both the background auroral ionosphere and of the effects produced during active research using the transmitter system. Output from these instruments is readily available world-wide in near real time over the internet.

During active ionospheric research, the signal generated by the transmitter system is delivered to the antenna array, transmitted in an upward direction, and is partially absorbed, at an altitude between 100 to 350 km (depending on operating frequency), in a small volume a few hundred meters thick and a few tens of kilometers in diameter over the site. The intensity of the HF signal in the ionosphere is less than 3 microwatts per cm², tens of thousands of times less than the Sun's natural electromagnetic radiation reaching the earth and hundreds of times less than even the normal random *variations* in intensity of the Sun's natural ultraviolet (UV) energy which creates the ionosphere. The small effects that are produced, however, can be observed with the sensitive scientific instruments installed at the HAARP facility and these observations can provide new information about the dynamics of plasmas and new insight into the processes of solar-terrestrial interactions.

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Pioneering Ionospheric Radio Science Research for the Twenty-First Century



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