



# **Monitoring of Radioactive Emission from NPP in Real Time**

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# IDEA

Emission Nuclear Power Plant

Gaseous Radioactive Emission (Isotopes  
of Ar, Kr, Xe, I)

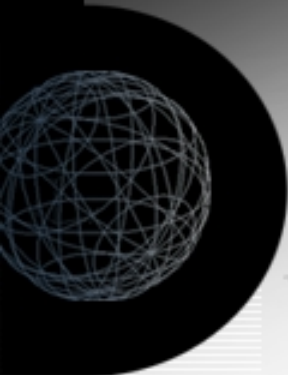
Radioactive Decay

High-energy Beta-Electrons

Photochemical Reactions

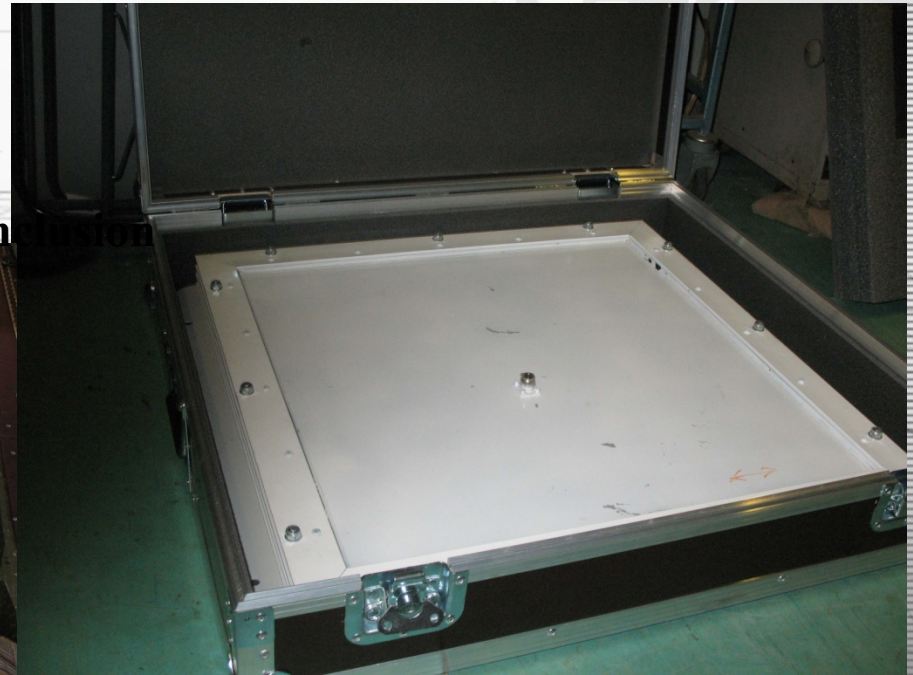
H, OH radiate at the frequencies

1420 MHz and 1665-1667 MHz

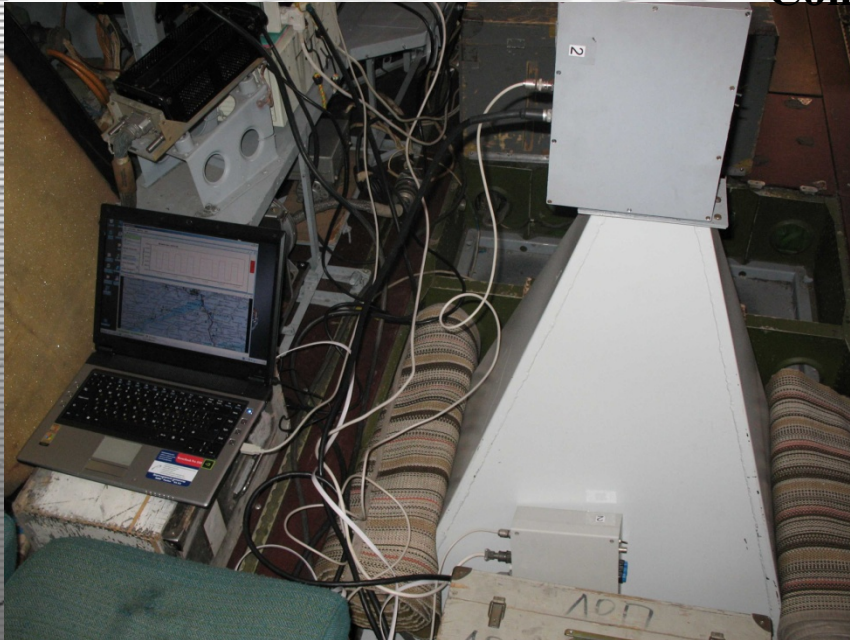


# Types of radiometer system

Ground based radiometer



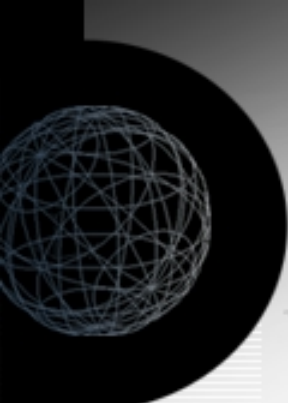
Airborne radiometer



# Conclusion

Frequencies, MHz	Power radiated from volume emission of 1 km <sup>3</sup>	Doppler spectral broadening	In spectral range 1÷10 GHz noise background	Attenuation by the atmospheric absorption	Table of bandwidth assignment among radio services of Russian Federation
1420	10 <sup>-13</sup> W	150 kHz	less than 10 <sup>-21</sup> W·m <sup>-2</sup>	less than 2dB	allocated for radioastronomical (passive) research. Using radiating radioelectronic devices in the specified bands is not recommended.
1665-1667	2×10 <sup>-11</sup> W	31.5 kHz			

- Radiant intensity on frequencies 1420 MHz and 1667 MHz has enough for monitoring of activity level of the nuclear power plant emissions from distance in 10s kilometers in real time.
- As OH and H radiate in one spectral range the perspective radiometer for radiation recording on frequency 1420 MHz can be used, without the considerable alterations and for radiation recording on frequency 1667 MHz.



# Thanks for your attention !

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