Theoretical and experimental research on the creation, maintenance, and control of artificial layers of ionization in the 50 to 90 km altitude range. The focus of the research is to assess the potential for exploiting such so-called 'artificial ionospheric mirrors' (AIM) as scatterers of radio waves to distances well beyond line-of-sight. The AIM concept is discussed in terms of a specific technical approach, the use of ground-based, very high power, RF waves to breakdown the atmosphere. The concept is described in terms of RF requirements to produce breakdown, electron production and losses, resultant ionization densities, and their lifetimes. In addition, issues concerning the RF reflection properties of artificial patches of ionization in the atmosphere are considered, and the potential of exploiting the AIM concept for practical applications is introduced.
Artificial Ionospheric Mirrors (AIM). A: Concept and issues

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