

A BIBLIOGRAPHY OF RECENT WORK ON PROPAGATION IN THE RADIO SPECTRUM FROM 10 TO 100 GHz



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U.S. DEPARTMENT OF COMMERCE / Office of Telecommunications

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F. K. STEELE
S. F. VAN HORN



U.S. DEPARTMENT OF COMMERCE
Frederick B. Dent, Secretary

Betsy Ancker-Johnson, Ph. D.
Assistant Secretary for Science and Technology

OFFICE OF TELECOMMUNICATIONS
John M. Richardson, Acting Director



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- Conducts research, engineering, and analysis in the general field of telecommunication science to meet government needs
- Acquires, analyzes, synthesizes, and disseminates information for the efficient use of the nation's telecommunication resources.

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A BIBLIOGRAPHY OF RECENT WORK ON PROPAGATION
IN THE RADIO SPECTRUM FROM 10 TO 100 GHz

F. K. Steele and S. F. Van Horn *

References are presented on the subject of recent (1971 to mid-1974) work on radio propagation through the atmosphere at frequencies from 10 to 100 GHz. The references are separated into six major categories covering propagation through precipitation, multipath propagation, propagation through non-turbulent-clear and turbulent-clear atmospheres, measurements/data, and a general category.

Key Words: Attenuation, bibliography, gigahertz, microwaves, millimeter waves, multipath, polarization, precipitation, propagation.

This report presents a bibliography on recent (1971 to mid-1974) work on the propagation through the atmosphere of electromagnetic waves nominally from 10 to 100 GHz. It follows an earlier bibliography by Vogler and Van Horn (OT/TRER-30), which covered propagation from 10 GHz to 1000 THz, and a report by Thompson et al. (OT/TRER-34), which reviewed propagation factors from 10 to 100 GHz. The present report loosely categorizes the references according to their relevance to subject areas of greatest information and need as identified by OT/TRER-34. These categories are:

A. Propagation through precipitation.

- | | |
|------------------|-------------|
| (1) Attenuation | (47 papers) |
| (2) Polarization | (25 papers) |
| (3) General | (27 papers) |

B. Multipath (16 papers)

C. Propagation through non-turbulent-clear atmosphere (15 papers)

* The authors are with the U. S. Department of Commerce, Office of Telecommunications, Institute for Telecommunication Sciences, Boulder, Colorado 80302.

- D. Propagation through turbulent-clear atmosphere (24 papers)
- E. Measurements/data (23 papers)
- F. General (104 papers)

The bibliography contains only reports originally in, or translated into, the English language. The reports appear in a variety of foreign and domestic media, such as proceedings of international symposia, technical journals, and organization reports. The symposia surveyed dealt primarily with radio propagation; the technical journals were concerned primarily with radio propagation, radio science, telecommunications, electrical and electronic engineering, physics, chemistry, electronics, meteorology, and general science. The organization reports were mainly U.S. Government-sponsored (unclassified), and most were found through the National Technical Information Service (NTIS). An NTIS Access Number (when known) is given for each Government-sponsored report cited. It is hoped that the reference list will aid propagation workers in finding references pertinent to their investigations, and that future bibliographies may be published as may be appropriate.

The reader is referred to a report entitled "A Survey of Earth-to-Satellite Propagation Factors Between 2.5 and 275 GHz," by D. A. Hill (OT Rept. 74-43, available from the Superintendent of Documents, U. S. Government Printing Office, Washington, DC 20402), which contains many other valuable references.

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SECTION A

PROPAGATION THROUGH PRECIPITATION

PART 1 - ATTENUATION

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SECTION D

TURBULENCE

PROPAGATION THROUGH TURBULENT, CLEAR ATMOSPHERE

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<p>15. ABSTRACT (A 200-word or less factual summary of most significant information. If document includes a significant bibliography of literature survey, mention it here.)</p> <p>References are presented on the subject of recent (1971 to mid-1974) work on radio propagation through the atmosphere at frequencies from 10 to 100 GHz. The references are separated into six major categories covering propagation through precipitation, multipath propagation, propagation through non-turbulent-clear and turbulent-clear atmospheres, measurements/data, and a general category.</p>			
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