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Soviet Gyrotron Research,

1967-1979

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Abstract

This report is a listing of 134 articles on gyrotrons published in Soviet journals in the years 1967-1979. The bibliography should prove useful to those engaged in gyrotron research.

I. Introduction

This report is a listing of articles on gyrotrons published in Soviet journals in the years 1967-1979. The main emphasis is on articles which deal directly with theoretical and experimental problems of gyrotron oscillator and amplifier research. A few papers have been included on related topics, such as design and testing of magnetron electron guns, resonator, waveguide and wave transformer theory and experiment, relativistic cyclotron masers, and other topics. These papers are included because they are often cited in the main gyrotron literature and are important to achieving a complete picture of Soviet gyrotron research. Most papers on applications of gyrotrons have been excluded. Although Soviet gyrotron research dates back to about 1959, the early literature is incomplete and contains some inaccurate results. Soviet gyrotron research prior to 1967 is summarized in several major papers published in 1967, and references to the early work are contained in those papers.

II Articles Cited

Most of the articles cited, but not all, are from the following journals:

- RPQE = Radiophysics and Quantum Electronics, English translation of Izv. VUZ. Radiofizika
- REEP = Radio Engineering and Electronic Physics, English translation of Radiotekhnika i Elektronika
- RECS = Radio Electronics and Communications Systems, English translation of Izv. VUZ. Radioelektronika
- ET = "Elektronnaiia Tekhnika", Series 1, "UHF Electronics," in Russian.

We have obtained copies of all of the articles listed (with three exceptions, which are so indicated).

III Discussion

The major purpose in compiling the present bibliography is to facilitate gyrotron research by providing a guide to the impressive and wideranging work performed in the Soviet Union. The work includes many detailed investigations of well known research problems, such as multi-mode oscillation and space charge effects. However, there are a variety of unusual concepts and techniques that are also described in the Soviet literature.

A large bibliography of Soviet papers on gyrotrons was previously reported by S. Ahn, V.L. Granatstein and J. Hirshfield, "Collection of papers on the Electron Cyclotron Maser (Gyrötron) Volume 1 Soviet Papers," NRL Memorandum Report 3937, Oct. 1979. The present bibliography is more extensive, in part because it contains papers from the journals ET and RECS not included in that report.

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