

**Radiation from Relativistic Electrons in Periodic Structures "RREPS-23" & Electron, Positron, Neutron and X-ray Scattering under External Influences
"Meghri-23"**



Contribution ID: 175

Type: **Poster**

TUNING OF THE RESONANT FREQUENCY OF LIGHT MODEMS ON VOLUMETRIC RESONATORS

Tuesday 19 September 2023 17:18 (1 minute)

To operate a high-precision light rangefinder in a wide temperature range $(-10 + 40)^\circ \text{C}$, as well as to resolve the ambiguity of the measurement, it is necessary to ensure a change in the resonant frequency within 10-15% of the fundamental frequency. At a fixed modulation frequency of 1200 MHz, a device for smoothly changing the modem frequency within 150-180 MHz should be installed on the modem resonator.

The issues of changing the resonant frequency of coaxial and biaxial resonators when dielectrics are introduced into the free volume of the resonators are considered. The derived main dependences show that the distribution of the field lines E does not shift, the dependence of the resonator frequency change on the location of the dielectric is also derived, which allows determining the range of tuning of the resonant frequency, which also depends on the type and volume of the introduced dielectric.

Problems of change in the resonant frequency of the coaxial and biaxial resonators when the free volume cavities are introduced dielectrics. Derived basic relations show that it does not shift the distribution of the field lines E , also derived the dependence of the frequency of the resonator on the location of the dielectric, which allows determining the tuning range of the resonance frequency. The tuning range is also dependent on the type and volume of injected dielectric.

Author: HAYRAPETYAN, Yeghisabet (Institut of Applied Problems of Physics NAS RA)

Co-author: HUNANYAN, Hovnan (Institut of Applied Problems of Physics NAS RA)

Presenter: HAYRAPETYAN, Yeghisabet (Institut of Applied Problems of Physics NAS RA)

Session Classification: Poster session II

Track Classification: e^-/e^+ , X-ray, THz, and neutron based applications: Radiation Processes and Material Science