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Features of Scattering of a Plane Electromagnetic Wave on a Conductive Ball

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The phenomenon of scattering of a plane electromagnetic wave on a conductive ball is studied taking into account the dispersion of electromagnetic waves inside the ball material. The analysis is based on the corresponding exact analytical solutions of Maxwell equations. These solutions are obtained by the method of Green function presented in [1,2].

A visual explanation is given about why the resonant scattering may appear when plane waves of certain frequencies scatter on the ball. The operation of spaser [3] is based on the special case of the phenomenon under consideration, when the ball radius is much smaller than the wavelength of scattered wave.

This phenomenon may have a wide spectrum of important practical applications.

References

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Primary author: Prof. GRIGORYAN, Levon (Institute of Applied Problems in Physics)

Co-authors: Ms SARGSYAN, Anush (Institute of Applied Problems of Physics NAS RA, 25 Hr. Nersessian St.,Yerevan, Armenia); Dr KHACHATRYAN, Hrant (Institute of Applied Problems in Physics); Dr GRIGORYAN, Mher (Institute of Applied Problems of Physics NAS RA, 25 Hr. Nersessian St.,Yerevan, Armenia)

Presenter: Ms SARGSYAN, Anush (Institute of Applied Problems of Physics NAS RA, 25 Hr. Nersessian St.,Yerevan, Armenia)

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