

Marquette University Microwave Engineering Seminar

Friday, September 9, 2016. 4:00 P.M. HH 112

Phase Pulling of Auxiliary Waves

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Abstract:

Most of practical radiation patterns of an antenna are inhomogeneous spherical waves. If it is a spherical wave, the auxiliary waves do not exist [1]. If the study of auxiliary waves is needed, an acceptable pseudo auxiliary wave of reasonable size of errors must be created in a far field zone of the radiation.

The phase pulling of an auxiliary wave by the principal wave is a useful technology in radiation pattern study. In this seminar, not only the phase pulling, phase pushing, frequency pulling, frequency pushing are presented. Phase pushing and pulling mechanisms due to the phase and the amplitude of the principal wave are presented. Frequency pulling and pushing mechanisms due to the frequency and amplitude of the principal waves are also presented.

The basic principles utilized for this study are the principle of equal propagation figures of the principal wave and auxiliary waves, the principle of the linear superposition of electromagnetic fields and the principle of the voltage figure(VF), which is a new term introduced for this seminar.

In this seminar, experimental procedure involving phase pulled concentric and eccentric auxiliary waves[1] is presented and discussed. This may give an explanation of the superluminal speed propagation of radio waves experimentally observed in 1989[2].

References:

- [1] T. K. Ishii, "Eccentric Auxiliary Waves of An Isotropic TEM Mode Spherical Wave". Marquette University Microwave Engineering Seminar. January 29 2016. Marquette University, Milwaukee, Wisconsin.
- [2] G. C. Giakos and T. K. Ishii, "Rapid Pulsed Microwave Propagation". IEEE Microwave and Guided Wave Letters, vol. 1. No. 12, December1991. pp.374-375.

Seminar: Professor Yiran Chen. Monday, November 18, 2019 - 4:00pm. "How to Obtain and Run Light and Efficient Deep Learning Networks". Professor Yiran Chen, Department of Electrical & Computer Engineering, Duke University. LSL S330, Hospitality Space S320. Seminar: Dr. Ramasamy Venkatesan. Dr. Jorge L. Salazar-Cerreno, William H. Barkow Presidential Professor, School of Electrical & Computer Engineering Advanced Radar Research Center (ARRC), The University of Oklahoma, Norman. Marston, Room 132. Seminar: Professor Markus U. Mock. Microwaves should be used to reheat food, not cook it, but it's better not to reheat the same meal more than once especially rice (Credit: Getty Images). The high temperatures of the microwave may also pose some risk. Generally speaking, higher temperatures aren't a problem, but there is some research suggesting a risk linked to cooking some starchy foods in the microwave, including cereals and root vegetables. When Betty Schwartz, professor of nutritional sciences at the Hebrew University of Jerusalem, saw her students heating jacket potatoes in the microwave on their lunchbreaks, she noticed small crystals inside their potatoes. When she analysed them, she found they were high in the chemical acrylamide, which can be a natural by-product of cooking. Microwave Engineering Fourth Edition. David M. Pozar University of Massachusetts at Amherst. The continuing popularity of Microwave Engineering is gratifying. I have received many letters and emails from students and teachers from around the world with positive comments and suggestions. Power Absorbed by a Good Conductor 27 1.7 Plane Wave Reflection from a Media Interface 28 General Medium 28 Lossless Medium 30 Good Conductor 31 Perfect Conductor 32 The Surface Impedance Concept 33 1.8 Oblique Incidence at a Dielectric Interface 35 Parallel Polarization 36 Perpendicular Polarization 37 Total Reflection and Surface Waves 38 1.9 Some Useful Theorems 40 The Reciprocity.