SEMINAR ANNOUNCEMENT

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
COLLEGE OF DESIGN AND ENGINEERING
Website: https://cde.nus.edu.sg/ece

Area: Microwave & Radio Frequency (MWRF)

Host: Prof Chen Xudong

TOPIC	:	**Differentiable Physical Optics for Inverse Problems**
SPEAKER	:	**Mr Tan Yue Feng** **Graduate Student, ECE Dept, NUS**
DATE	:	**Friday, 20 November 2026**
TIME	:	**10:00AM-11:00AM**
VENUE	:	**Zoom Meeting** **https://nus-sg.zoom.us/j/83480140966?pwd=sXmF4lGWobR5rH38VsFXbGaajb3C6h.1** **Meeting ID: 834 8014 0966** **Passcode: 352738**

ABSTRACT

The physical optics (PO) approximation of evaluating scattered electrical/magnetic fields is of important use, especially in radar societies where the scatterer is electrically large (>10λ). This approximation is significantly faster and consumes less memory than traditional full wave methods (MoM, FEM).

However, in the context of inverse problems, PO is not a suitable method as the forward problem, due to discontinuities at the boundaries of lit and shadowed regions, making PO non-differentiable at the boundaries, making iterative inverse methods impossible.

To this end, we propose a method, borrowing from the Reynold's transport theorem, that seeks to reconcile the non-differentiability at the boundaries such that inverse problems based on PO are possible.

BIOGRAPHY

Tan Yue Feng is a graduate student at NUS ECE, working on inverse problems for electromagnetic scattering, with a particular interest in electrically large problems.

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