



# THE UNIVERSITY OF CHICAGO

COMPUTATIONAL AND APPLIED MATHEMATICS COLLOQUIUM

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Pencil-beam Approximation of Fokker-Planck and Applications

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via ZOOM

## ABSTRACT

Solutions of stationary Fokker-Planck equations in the narrow beam regime are commonly approximated by either ballistic linear transport or by a Fermi pencil-beam equation. In a joint project with Guillaume Bal, we present a rigorous approximation analysis of these three models in a half-space geometry, where error estimates are obtained in a 1-Wasserstein sense which is an adapted metric to quantify beam spreading.

The pencil-beam approximation has been recently used to model an inverse problem arising in Light-Sheet Fluorescence Microscopy imaging, where uniqueness and stability of the inverse problem have been established. This is a collaborative work with researchers from Chile.

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