Colloquium Nº113

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## Physics-inspired imaging principles for the benefit of computer vision

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Blurring kernel

Noise (e.g., Gaussian)

$$x\otimes K+n=y$$



Underlying image

 $\hat{x} = \operatorname{argmin} \frac{1}{2} \|y - Kx\|_2^2$ 

**Distorted image** 

## Abstract

In this seminar, I will review some of our recent publications within the scope of using the math of image formation for the benefit of standard computer vision tasks. We will skim through 4 papers, where an optimization task takes into account the trade-off between image quality and the quality of downstream task. The "magic" occurs in the Fourier domain, which helps gain extra performance from your models as well as sheds some light on their interpretability.





