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Pareto-Laplace Filtration Framework for Optimization

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Integral transform methods are a cornerstone of applied physics in optics, control, and signal processing. These areas of application benefit from physics techniques not just because the techniques are quantitative, but because the quantitative knowledge that physics generates provides concrete insight. Here, we introduce an integral transform framework for optimization that puts it on an analogous physical footing to problems in optics, control, and signals. We illustrate the broad applicability of this framework on example problems arising in additive manufacturing and land-use planning. We argue that this framework both enlarges the interface between physics and new areas of application, and it enlarges we consider physical systems.

Keyword-1

Applied Physics

Keyword-2

Integral Transforms

Keyword-3

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