

Abstract Submitted
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Using Machine Learning to Discover Theories of Everything¹

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The great difficulty with a “theory of everything” is that it needs to model complex, non-linear relationships between variables. I will present the nuts and bolts of a machine learning framework that uses similarity kernels to transform the non-linear problem into a tractable, linear one. Inasmuch as the method relies crucially on mathematical representations, we investigate it by example: predicting the properties of all possible materials. The key idea is to construct a continuous, smooth, differentiable representation with appropriate invariances under available symmetries.

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