

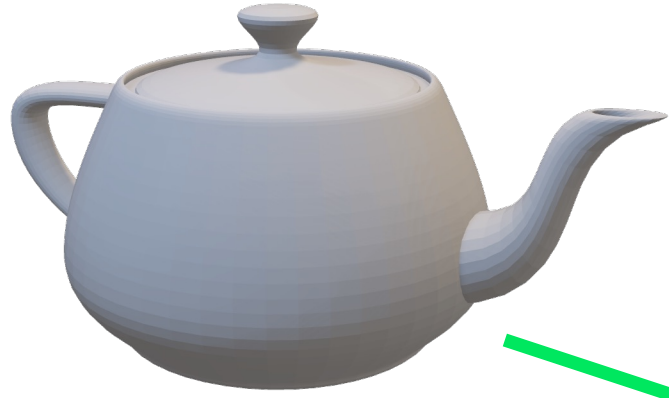
# A Generative Geometry Foundation Model for Engineering Applications



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# PHYSICS X

# Original Surface

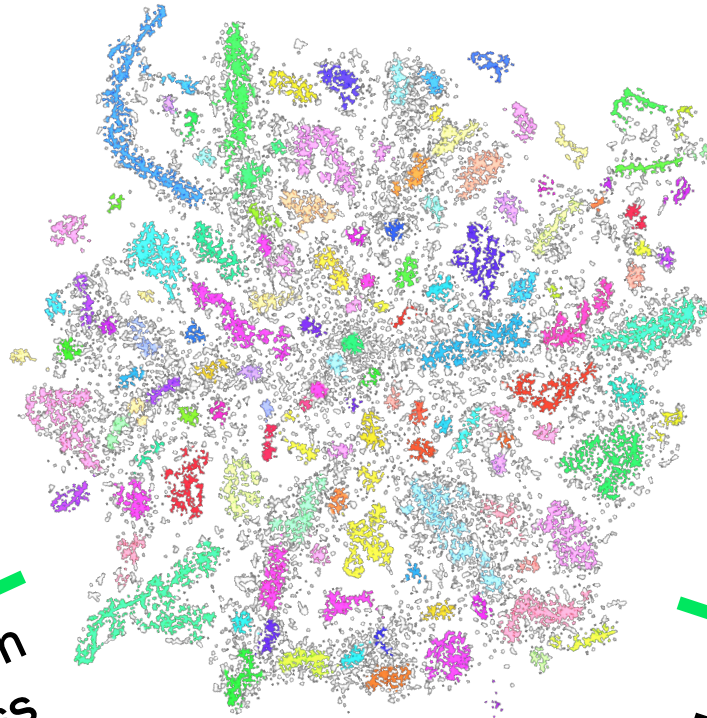


Encoder

# Reconstructed Surface

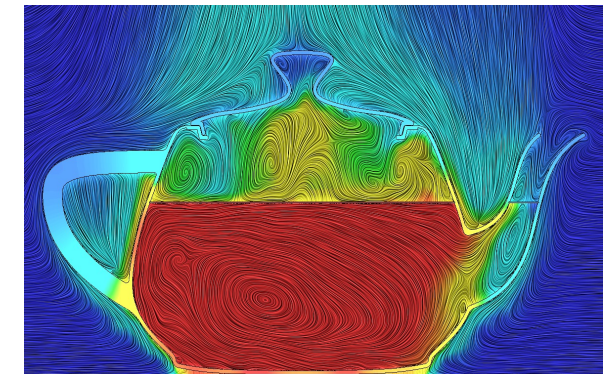


Geometry Decoder



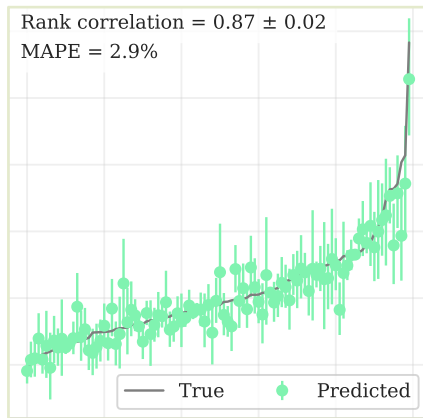
## Latent Code (512 element vector)

Physics Decoder



## Physical Field

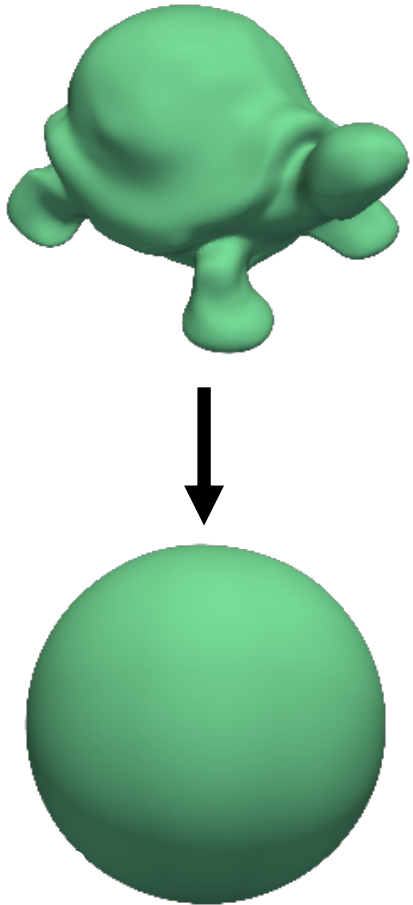
Gaussian Process



## Physical Scalar

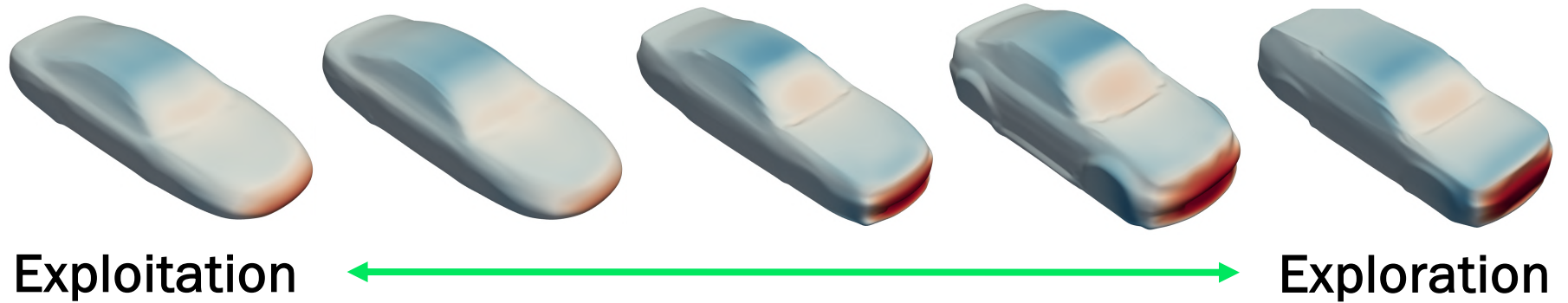


## Minimization of area-to-volume ratio through differentiation



## Batched Bayesian optimization to identify low-drag cars

Fit a Gaussian Process on the latent codes of cars to predict their drag, then applied Bayesian Optimization to identify a batch that jointly minimized the lower confidence bound.



## 3D printed interpolation between a tortoise and a hare

Linearly interpolated the latent codes corresponding to a tortoise and a hare.

