UNIVERSITÀ DEGLI STUDI DI PADOVA

DIPARTIMENTO DI SCIENZE STATISTICHE

# Seminar

# STATISTICAL SCALABILITY OF APPROXIMATE LIKELIHOOD INFERENCE


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**Abstract** : www.stat.unipd.it/fare-ricerca/seminari

## STATISTICAL SCALABILITY OF APPROXIMATE LIKELIHOOD INFERENCE

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In cases where it is not possible to evaluate the likelihood function exactly, an alternative is to find a numerical approximation to the likelihood, then to use this approximate likelihood in place of the true likelihood to do inference about the model parameters.

Approximate likelihoods are typically designed to be computationally scalable, but the statistical properties of these methods are often not well understood: fitting the model may be fast, but is the resulting inference any good? I will describe conditions which ensure that the approximate likelihood inference retains good statistical properties, and discuss the statistical scalability of inference with an approximate likelihood, in terms of how the cost of conducting statistically valid inference scales as the amount of data increases.

I will demonstrate the implications of these results for a particular family of approximations to the likelihood used for inference on an Ising model, and for Laplace approximations to the likelihood used for inference in mixed-effects models.