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Uncertainty quantification and identifiability of SIR-like dynamical systems for epidemiology

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In this talk, we provide an overview of the methods that can be used for prediction under uncertainty and data fitting of dynamical systems, and of the fundamental challenges that arise in this context, see [1]. The focus is on SIR-like models, that are being commonly used when attempting to predict the trend of the COVID-19 pandemic, but most of the points that we touch upon are actually generally valid for inverse problems in more general setups. In particular, we raise a warning flag about identifiability of the parameters of SIR-like models; often, it might be hard to infer the correct values of the parameters from data, even for very simple models, making it non-trivial to use these models for meaningful predictions.

REFERENCES

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