Complexity in Analysis and Parameters

Florian Steinberg

Mathematik AG1
Technische Universitt Darmstadt

In their 2010 paper "Complexity theory for operators in analysis" Kawamura and Cook introduced what is currently the most used framework for complexity in analysis. While it is well accepted by the theoretical side of the computable analysis community, many of the people that produce software based on computable analysis do not fully accept it. We give some examples where there indeed is a discrepancy between the predictions of the framework and what seems to be efficiently computable in practice. We present parameterized spaces as a fix of this. We give some basic results that justify the design choices. Finally, we give a fairly long list of notions showing up in literature that feature very similar ideas.