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Ingrid Daubechies*, Duke University, Durham, NC 27708. *Mathematical Frameworks for Signal and Image Analysis. Lecture III: Adaptive time-frequency methods.*

We will visit several examples in signal and image analysis, every time building an appropriate mathematical framework, ranging from functional and harmonic analysis to differential geometry. Although there will be cross-referencing, the lectures will be sufficiently independent that each can stand on its own, so that JMM participants could follow any of the lectures even if they missed one or more preceding it.

Lecture III: Many audio and medical signals (such as ECG) depending exhibit frequency profiles that “change with time”. To even define this notion, one needs time-frequency (a.k.a. microlocal) analysis. Extracting precise components can be quite challenging; this talk reviews some recent advances. (Received September 3, 2019)