ACOUSTICS2008/547
Sparse representations of audio: from source separation to wavefield compressed sensing ?

Remi Gribonval

INRIA, IRISA, Campus de Beaulieu, 35042 Rennes Cedex, France

Sparse signal representations, which are at the heart of today's coding standards (JPEG, MPEG, MP3), are known to have had a substantial impact in signal compression. Their principle is to represent high-dimensional data by a combination of a few elementary building blocks-called atoms-chosen from a large collection called a dictionary. Over the last five years, theoretical advances in sparse representations have highlighted their potential to impact all fundamental areas of signal processing. We will discuss some current and emerging applications of sparse models in musical sound processing including: signal acquisition (Compressed Sensing - sampling wavefields at a dramatically reduced rate) and signal manipulation (e.g. source separation and enhancement for digital re-mastering). We will conclude by discussing the new algorithmic and modeling challenges raised by these approaches.