1035-94-64 **Patrick Flandrin*** (flandrin@ens-lyon.fr), Ecole Normale Supérieure de Lyon, Physics Department (UMR CNRS 5672), 46 allée d'Italie, 69364 Lyon Cedex 07, France. *Time-frequency surrogates.*

A time-frequency description is naturally adapted to signals and processes that may undergo nonstationary behaviors. Beyond exploratory data analysis, time-frequency approaches are often advocated for decision problems such as detection, estimation or classification, thus calling for specific statistical tests. We propose here a general framework for such tests, with a null hypothesis based on the use of suitable, stationarized, surrogate data. The principle of surrogate stationarization is presented and three variations of its application are discussed as examples. In the first one, the concept of stationarity itself is revisited relatively to an observation scale and tested from a machine learning perspective, with surrogates considered as a learning set. In the second example, transient detection is tackled through comparisons of complexity measures in the time-frequency plane between original and surrogate data. Whereas, in both examples, the time-frequency input space consists of spectograms or Wigner-based distributions, the third example provides preliminary results along similar lines, but based on intrinsic mode functions extracted from empirical mode decompositions. (Received July 06, 2007)