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**Stephane Jaffard\*** ([jaffard@univ-paris12.fr](mailto:jaffard@univ-paris12.fr)), LAMA, Université Paris 12 - Val de Marne,  
61, avenue du Général de Gaulle, 94010 Creteil, France. *A grandcanonical multifractal formalism.*

Multifractal analysis, in its usual form, deals with the determination of the size of the sets of points where a measure or a function has a given Hölder exponent (the term “size” usually referring either to the Hausdorff or the Packing dimension). In the present contribution, two exponents are attached at each point: the usual Hölder exponent, but also an oscillation exponent (by example, for “typical” chirp singularities  $x^\alpha \sin(x^{-\beta})$ , the Hölder exponent is  $\alpha$  and the oscillation exponent is  $\beta$ ). The grandcanonical multifractal formalism addresses the problem of determining the dimensions of the sets of points where this couple of exponents takes a given value. Applications to signal processing will be given. (Received September 15, 2009)