



Weak signal detection: condition for noise induced enhancement

Submitted by Marie-Françoise... on Tue, 12/16/2014 - 17:33

Titre	Weak signal detection: condition for noise induced enhancement
Type de publication	Article de revue
Auteur	Duan, Fabing [1], Chapeau-Blondeau, François [2], Abbott, Derek [3]
Editeur	Elsevier
Type	Article scientifique dans une revue à comité de lecture
Année	2013
Langue	Anglais
Numéro	5
Pagination	1585-15
Volume	23
Titre de la revue	Digital Signal Processing
ISSN	1051-2004
Mots-clés	Noise induced enhancement [4], Noise-enhanced detection [5], Signal detection [6], stochastic resonance [7]
Résumé en anglais	For the detection of a weak known signal in additive white noise, a generalized correlation detector is considered. In the case of a large number of measurements, an asymptotic efficacy is analytically computed as a general measure of detection performance. The derivative of the efficacy with respect to the noise level is also analytically computed. Positivity of this derivative is the condition for enhancement of the detection performance by increasing the level of noise. The behavior of this derivative is analyzed in various important situations, especially showing when noise-enhanced detection is feasible and when it is not.
URL de la notice	http://okina.univ-angers.fr/publications/ua6510 [8]
DOI	10.1016/j.dsp.2013.05.009 [9]
Lien vers le document	http://dx.doi.org/10.1016/j.dsp.2013.05.009 [9]

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[1] [http://okina.univ-angers.fr/publications?f\[author\]=1972](http://okina.univ-angers.fr/publications?f[author]=1972)

[2] <http://okina.univ-angers.fr/f.chapeau/publications>

[3] [http://okina.univ-angers.fr/publications?f\[author\]=1973](http://okina.univ-angers.fr/publications?f[author]=1973)

[4] [http://okina.univ-angers.fr/publications?f\[keyword\]=10685](http://okina.univ-angers.fr/publications?f[keyword]=10685)

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[7] [http://okina.univ-angers.fr/publications?f\[keyword\]=5918](http://okina.univ-angers.fr/publications?f[keyword]=5918)

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