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CTBT: SCIENCE AND TECHNOLOGY CONFERENCE

T1.1-P18

Science Slam
1-mn poster presentation

Infrasound propagation in multiple-scale random media using surrogate models

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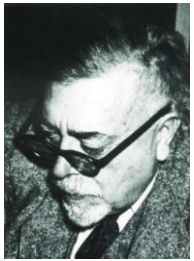
Basic idea of gPC (N. Wiener, 1938):
represent $Y = F(X)$ as

$$Y = \sum_{j=1}^{N} a_j H_j(\xi)$$

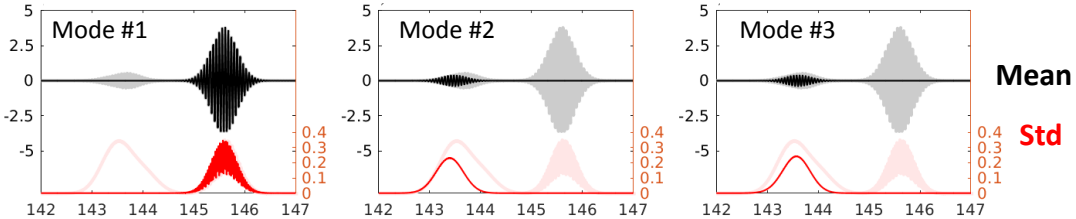
with $X = X(\xi)$

H_j: polynomials
Y: normal modes



Wave propagation as a black box

Need to assess the impact of uncertain data $X(\xi)$ on outputs Y.
Difficulty: finding all possible solutions spanned by ξ.



Motivation: In the IDC's network processing, important aspects of infrasound propagation are not included, due to computational cost issue. In this work we show how gPCs, calibrated using a few realizations of the atmosphere, can be used for real-time processing.