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Professor Dr. William Thuillot
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Dear Professor Dr. Thuillot:

Hereby I am reporting to you on the thesis entitled

"Modélisation de Systèmes Dynamiques
Déterministes, Stochastiques ou Discrets",

submitted for the PhD degree by

Frédéric Pierret.

This is an exceptional doctoral thesis in which the author studies discrete, continuous, and stochastic dynamical systems, including dynamic systems on time scales. Applications of these theoretical results to physics and astronomy are included. The thesis contains five parts as follows:

Part I. In Chapters 1–2, the author gives an introduction to stochastic calculus and time scales calculus.

Part II. In Chapters 3–6, stochastic perturbations in astronomy and physics are studied.

Part III. In Chapters 7–15, discrete and continuous models are studied, including dynamic systems on time scales.

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Part IV. In Chapters 16–20, multiscale functions are introduced and studied.

Part V. In Chapters 24–26, numerical methods and nonstandard discretization schemes are discussed.

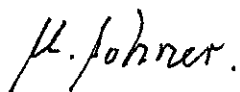
This thesis contains twelve recent research papers of the author. All of these papers are of exceptional high quality and some of them are already published or accepted for publication in highly esteemed international journals, the other ones are still under review. Such a publication record would be enough to grant tenure and promotion to Associate Professor at many universities in the United States.

The presentation of the results in this thesis is done very nicely, and many examples and color figures are included. This thesis was written in an exceptionally careful manner.

In the opinion of this referee, this is an **outstanding** thesis which deserves to be awarded the **highest possible** grade. However, some very minor corrections should be made before publication of the thesis, detailed as follows:

1. Some of the lines are too long and are running past the right margin, e.g., on pages 143, 294, 299, 300.
2. Some expressions should be in math mode, e.g., it should be $p = 2$ instead of $p=2$ on page 313.
3. Throughout, a space is introduced right before “.”. This space should be removed everywhere (unless it is a French specific rule to have this space). This applies also to the references (in fact, there, the space should be right after “.”).
4. The bibliography should be ordered alphabetically according to first authors' last names, e.g., Agarwal should be before Albeverio, Albu before Allouche, and Bohner before Bourdin.

Respectfully Submitted,



Martin Bohner