

Detailed response

Canadian Acoustics

Title: MODELING NON-DIFFUSE SOUND FIELDS IN ROOM ACOUSTICS: FROM MURRAY HODGSON'S EARLY WORKS TO THE DIFFUSION EQUATION MODEL

Authors: Vincent Valeau, Cédric Foy, Judicaël Picaut

Dear Editor,

We have tried to take into account as far as possible the remarks of the reviewers. We hope that you will find this revised version suitable for publication. In the following, you can find separate responses to the points raised by each reviewer.

Point-by-point reply to reviewer A

We thank this reviewer for his comments. Following his remarks and questions, we have tried to make appropriate changes whenever this has been possible. Here are our responses to the questions raised by this reviewer.

The manuscript is clear, self-consistent and exhaustive. I have only few minor issues that ask the authors to consider:

- 1) abstract line 1: substitute "or" with "of"

Done.

- 2) pag. 7 lines 254 - 258: "dependence from". This two sentences leave an unclear picture on this aspect. Can the authors either rephrase to better set the current knowledge or add some more remarks if available?

Following this remark, a new paragraph has been written on page 7, from line 258 ("More surprisingly, etc."), to better specify the dependence of the diffusion coefficient to absorption and to the scattering coefficient of the wall.

- 3) please add the physical dimensions of quantities to formulas when relevant

We have specified the physical dimensions of the mean free path (Eq (2)), the energy flow (Eq. (3)), and of the diffusion coefficient ("*the so-called "diffusion coefficient" D (unit m^2/s)*", Section 3, third paragraph), so that the dimension of Eq. (1) is clear.

- 4) page 10 lines 71 - 74: the sentence is not clear, please rephrase.

Page 10 is the bibliography and there are no lines 71-74. We are sorry but we could not identify the sentence pointed out by this reviewer.

Point-by-point reply to reviewer B

We thank this reviewer for his comments. Following his remarks and questions, we have tried to make appropriate changes whenever this has been possible. Here are our responses to the questions raised by this reviewer.

In this paper is not clear what the author's contribution is and what are the contributions from the literature. The author should better explain the personal contribute in this paper. As written and presented, the paper seems a simple synthesis of publications by other authors (a review). Please the author specify the personal contribute in this paper.

Yes, the paper is a review of the collaborative works between the authors and Murray on the diffusion equation model, the contribution being to highlight the fact that they can be seen as a natural continuation of Murray's earlier work on the modeling of non-diffuse sound fields. To make it clear, an additional sentence has been added at the end of the foreword section.

Furthermore, the following observations are made:
Page 4 row 177

Sorry, we could not identify the problem in the manuscript.

Additional minor changes

- The caption of Figures 1 and 2 have been completed.
- The number of Eq. (3) (Fick's law) has been corrected.