



Mathematics > Analysis of PDEs

Velocity averaging -- a general framework

Martin Lazar, Darko Mitrovic

(Submitted on 13 Jul 2011 (v1), last revised 22 Sep 2012 (this version, v3))

We prove that the sequence of averaged quantities $\int_{\mathbb{R}^m} u_n(\mathbf{x}, \mathbf{s}) \rho(\mathbf{s}) d\mathbf{s}$, is strongly precompact in $L^1(\mathbb{R}^d)$, where $\rho \in L^1(\mathbb{R}^m)$, and $u_n \in L^1(\mathbb{R}^m; L^1(\mathbb{R}^d))$, $s \geq 2$, are weak solutions to differential operator equations with variable coefficients. In particular, this includes differential operators of hyperbolic, parabolic or ultraparabolic type, but also fractional differential operators. If $s > 2$ then the coefficients can be discontinuous with respect to the space variable $\mathbf{x} \in \mathbb{R}^d$, otherwise, the coefficients are continuous functions. In order to obtain the result we prove a representation theorem for an extension of the H^s -measures.

Comments: generality is decreased and mistakes are corrected; to appear in Dyn of PDE

Subjects: **Analysis of PDEs (math.AP)**; Functional Analysis (math.FA)

MSC classes: 35A22, 35A27, 42B37, 35K70

Cite as: **arXiv:1107.2616 [math.AP]**

(or **arXiv:1107.2616v3 [math.AP]** for this version)

Submission history

From: Darko Mitrovic [view email]

[v1] Wed, 13 Jul 2011 17:53:23 GMT (41kb)

[v2] Tue, 29 May 2012 18:40:34 GMT (24kb)

[v3] Sat, 22 Sep 2012 06:25:34 GMT (24kb)

Which authors of this paper are endorsers?

Download:

- PDF
- PostScript
- Other formats

Current browse context:

math.AP

< prev | next >

new | recent | 1107

Change to browse by:

math

math.FA

References & Citations

- NASA ADS

Bookmark (what is this?)

