MR2351784 28A80 (49Q20)

Devillanova, G. (F-ENSET-AM); **Solimini, S.** (I-PBAR)

On the dimension of an irrigable measure. (English summary)

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MR2338494 49N45 (94A08)

Durand, Sylvain [Durand, Sylvain Marie Jean-Sébastien] (F-PCRD-LFD);
Nikolova, Mila (F-ENSET-AM)

Denoising of frame coefficients using l^1 data-fidelity term and edge-preserving regularization. (English summary)

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Dutykh, Denys (F-ENSET-AM); **Dias, Frédéric** (F-ENSET-AM)
Viscous potential free-surface flows in a fluid layer of finite depth. (English, French summaries)
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Mossino, Jacqueline (F-ENSET-AM); **Murat, François** (F-PARIS6-N); **Sili, Ali** (F-TLN)
Junction of elastic plates and beams. (English summary)
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Global existence for quadratic systems of reaction-diffusion. (English summary)
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Garnett, John B. (1-UCLA); **Le, Triet M.** (1-UCLA); **Meyer, Yves** (F-ENSET-AM); **Vese, Luminita A.** (1-UCLA)

Image decompositions using bounded variation and generalized homogeneous Besov spaces. (English summary)

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MR2320556 65M06 (76M12 76R50)

Alouges, François; **Le Coq, Gérard** (F-ENSET-AM);
Lorin, Emmanuel [Lorin de la Grandmaison, Emmanuel]

Two-dimensional extension of the reservoir technique for some linear advection systems. (English summary)

J. Sci. Comput. **31** (2007), *no. 3,* 419–458.

{A review for this item is in process.}

MR2325730 82C40 (82C21)
Desvillettes, L. (F-ENSET-AM); **Ricci, V.** (I-PLRME-MMM)
The Boltzmann-Grad limit of a stochastic Lorentz gas in a force field. (English summary)
Bull. Inst. Math. Acad. Sin. (N.S.) **2** (2007), *no. 2,* 637–648.

{A review for this item is in process.}

MR2321724 (2008a:35013) 35B27 (74G10)
Gustafsson, Björn (S-RIT); **Mossino, Jacqueline** (F-ENSET-AM)
A criterion for H-convergence in elasticity. (English summary)
Asymptot. Anal. **51** (2007), *no. 3-4,* 247–269.

This article is concerned with a very general result about H-convergence in homogenization theory. Classical definitions are recalled and shown to provide the same convergence criteria although they were first differently formulated. The elasticity problem is considered in its generality, thus extending mainly one-dimensional results to the multi-dimensional, tensorial framework. Finally, correctors are made explicit.

Besides the results, an interesting feature about this paper is that it concentrates on tools that were originally devoted to H-convergence, that is, the div-curl lemma and compensated compactness, thus enforcing the theory elaborated by F. Murat and L. Tartar.

Reviewed by *Isabelle Gruais*

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MR2316902 68T10 (62H30 68T45 68U10)
Cao, Frédéric (F-RENNB-II); **Delon, Julie** (F-CNRSTC-LTC);
Desolneux, Agnès (F-PARIS5-LAM); **Musé, Pablo** (F-ENSET-AM); **Sur, Frédéric**
A unified framework for detecting groups and application to shape recognition. (English summary)
J. Math. Imaging Vision **27** (2007), *no. 2,* 91–119.

{A review for this item is in process.}

MR2311857 65D18 (94A08)
Haddad, A. [Haddad, Ali] (1-UCLA); **Meyer, Y.** (F-ENSET-AM)
An improvement of Rudin-Osher-Fatemi model. (English summary)
Appl. Comput. Harmon. Anal. **22** (2007), *no. 3,* 319–334.

{A review for this item is in process.}

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MR2300291 65N30

Karakashian, Ohannes A. (1-TN); **Pascal, Frederic** (F-ENSET-AM)

Convergence of adaptive discontinuous Galerkin approximations of second-order elliptic problems. (English summary)

SIAM J. Numer. Anal. **45** (2007), *no. 2,* 641–665 (*electronic*).

{A review for this item is in process.}

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Note: This list, extracted from the PDF form of the original paper, may contain data conversion errors, almost all limited to the mathematical expressions.

MR2311435 (Review) 76B15 (86A05)
Fochesato, Christophe (F-ENSET-AM); **Grilli, Stéphan** (1-RI-OE); **Dias, Frédéric** (F-ENSET-AM)

Numerical modeling of extreme rogue waves generated by directional energy focusing. (English summary)

Wave Motion **44** (2007), *no. 5,* 395–416.

Summary: “Three-dimensional (3D) directional wave focusing is one of the mechanisms that contributes to the generation of extreme waves, also known as rogue waves, in the ocean. To simulate and analyze this phenomenon, we generate extreme waves in a 3D numerical wave tank (NWT), by specifying the motion of a snake wavemaker. The NWT solves fully non-linear potential flow equations with a free surface, using a high-order boundary element method and a mixed Eulerian-Lagrangian time updating. Some numerical aspects of the NWT were recently improved, such as the accurate computation of higher-order derivatives on the free surface and the implementation of a fast multipole algorithm in the spatial solver. The former has allowed the accurate simulation of 3D overturning waves and the latter has led to at least a one-order of magnitude increase in the NWT computational efficiency. This made it possible to generate

finely resolved 3D focused overturning waves and analyze their geometry and kinematics. In this paper, we first summarize the NWT equations and numerical methods. We then introduce a typical simulation of an overturning rogue wave, and analyze the sensitivity of its geometry and kinematics to water depth and maximum angle of directional energy focusing. We find that an overturning rogue wave can have different properties depending on whether it is in the focusing or defocusing phase at breaking onset. The maximum focusing angle and the water depth largely control this situation, and therefore the main features of the rogue wave crest, such as its 3D shape and kinematics."

MR2311201 93D05 (93C20)

Beauchard, Karine (F-ENSET-AM); **Coron, Jean Michel** (F-PARIS11);
Mirrahimi, Mazyar (F-ENSMP-AS); **Rouchon, Pierre** (F-ENSMP-AS)

Implicit Lyapunov control of finite dimensional Schrödinger equations. (English summary)

Systems Control Lett. **56** (2007), *no. 5,* 388–395.

{A review for this item is in process.}

MR2303373 (2007k:49089) 49Q20

Morel, Jean-Michel (F-ENSET-AM); **Santambrogio, Filippo** (I-SNS)

Comparison of distances between measures. (English summary)

Appl. Math. Lett. **20** (2007), *no. 4,* 427–432.

Summary: "The problem of optimal transportation between a set of sources and a set of wells has become recently the object of new mathematical models generalizing the Monge-Kantorovich problem. These models are more realistic, as they predict the observed branching structure of communication networks. They also define new distances between measures. The question arises of how these distances compare to the classical Wasserstein distance obtained from the Monge-Kantorovich problem. In this work we show sharp inequalities between the d_α distance induced by branching transport paths and the classical Wasserstein distance over probability measures in a

compact domain of $\mathbb{R}^m$."

MR2282276 62H35 (62C10 68U10 90B22)
Nikolova, Mila (F-ENSET-AM)
Model distortions in Bayesian map reconstruction. (English summary)
Inverse Probl. Imaging **1** (2007), *no. 2,* 399–422.

{There will be no review of this item.}

MR2290327 49Q20
Devillanova, G. (F-ENSET-AM); **Solimini, S.** (I-PBAR)
Elementary properties of optimal irrigation patterns. (English summary)
Calc. Var. Partial Differential Equations **28** (2007), *no. 3,* 317–349.

{A review for this item is in process.}

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MR2286593 (2007h:76025) 76B55 (35Q51 37K05 76B25 76E30)

Agafontsev, D. S. (RS-AOS-L); **Dias, F. [Dias, Frédéric]** (F-ENSET-AM);
Kuznetsov, E. A. [Kuznetsov, Evgeniĭ Aleksandrovich[1]] (F-ENSET-AM)

Deep-water internal solitary waves near critical density ratio. (English summary)

Phys. D **225** (2007), *no. 2,* 153–168.

Summary: "We study both supercritical and subcritical bifurcations of internal solitary waves propagating along the interface between two ideal fluids. We derive a generalized nonlinear Schrödinger equation that describes solitons near the critical density ratio corresponding to the transition from a subcritical to a supercritical bifurcation. This equation takes into account gradient terms associated with the four-wave interactions, the so-called Lifshitz term and a nonlocal term analogous to that first found by Dysthe for pure gravity waves, as well as the term representing six-wave nonlinear interactions. Within this model we find two branches of solitons and analyze their Lyapunov stability. A stability analysis shows that solitons below the critical ratio are stable in the Lyapunov sense in the wide range of soliton parameters. Above the critical density ratio solitons are shown to be unstable with respect to finite perturbations."