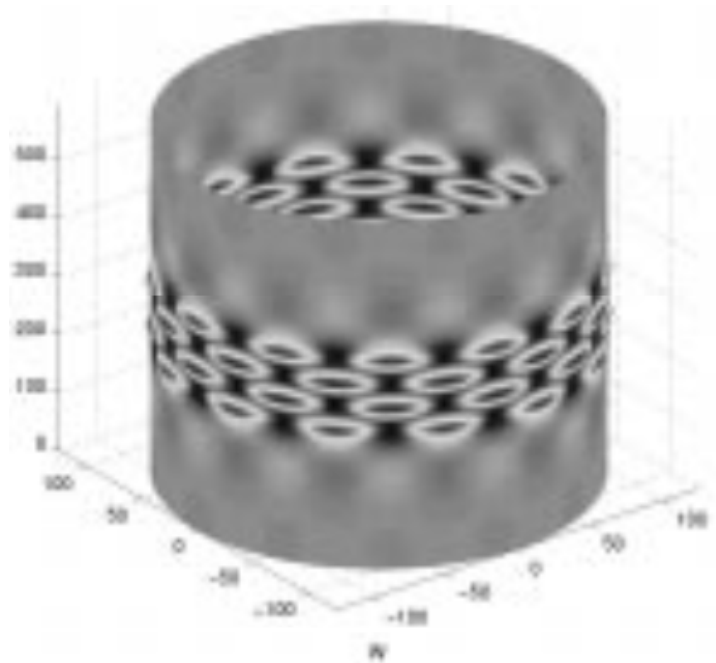




**Professor Dr. Mark A. Peletier**



From: "Cylindrical Shell Buckling: A Characterization of Localization and Periodicity" by Hunt, Lord & Peletier, 2003

See:  
<http://www.win.tue.nl/~mpeletie/>  
<http://www.win.tue.nl/~mpeletie/Research/pubs.shtml>  
<http://www.tue.nl/onderzoek/instituten-groepen-scholen/top-research-groups/wwwicmstuenl/people/profdr-mark-peletier/>  
[http://www.informatik.uni-trier.de/~ley/db/indices/a-tree/p/Peletier:Mark\\_A=.html](http://www.informatik.uni-trier.de/~ley/db/indices/a-tree/p/Peletier:Mark_A=.html)  
<http://www.bath.ac.uk/cnm/people.html>

Technische Universiteit Eindhoven

**Research:**

A couple of themes dominate my work: variational calculus, nonlinear evolution problems (e.g. porous media flow), stability of elastic structures, and minimization over (but not of) convex functions. And much of my mathematical work is related to applications. I've annotated the publications and grouped them more-or-less accordingly:

- Partial localization and understanding the stability of lipid bilayers
- Elastic structures: the elastic strut on an elastic foundation and twisted rods
- Folding in geological structures

Newton's problem of the body of least resistance

## Teaching:

Variational Modelling: Gradient flows and optimal transport

Inleiding Functionaalanalyse (2WA23)

Maat- en Integratietheorie (Measure and Integration Theory, 2WA24)

Approximatie in Functieruimten (2WA16)

Partial Differential Equations (2WA09)

## Mark Peletier's publications:

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Mark A. Peletier and Michiel Renger, Variational formulation of the Fokker-Planck equation with decay: a particle approach (arxiv:1108.3181), submitted (2011).

Steffen Arnrich, Alexander Mielke, Mark A. Peletier, Giuseppe SavarÈ, and Marco Veneroni, Passing to the Limit in a Wasserstein Gradient Flow: From Diffusion to Reaction, online available at Calculus of Variations and Partial Differential Equations (2011).

Stefan Adams, Nicolas Dirr, Mark A. Peletier, and Johannes Zimmer, From a Large-Deviations Principle to the Wasserstein Gradient Flow: A New Micro-Macro Passage, Communications in Mathematical Physics, 307, pp. 791-815 (2011).

Luca Natile, Mark A. Peletier, and Giuseppe SavarÈ, Contraction of general transportation costs along solutions to Fokker-Planck equations with monotone drifts, Journal de MathÈmatiques Pures et AppliquÈes 95, pp.18-35 (2011).

Mark A. Peletier, Giuseppe SavarÈ, and Marco Veneroni, From diffusion to reaction via  $\Gamma$ -convergence, SIAM Journal on Mathematical Analysis, 42(4), pp. 1805-1825 (2010).

Jim W. Portegies and Mark A. Peletier, Well-posedness of a parabolic moving-boundary problem in the setting of Wasserstein gradient flows, Interfaces and Free Boundaries, 12, pp. 121-150 (2010).

### On partial localization and block copolymer models

Rustum Choksi, Mark A. Peletier, and JF Williams, On the Phase Diagram for Microphase Separation of Diblock Copolymers: an Approach via a Nonlocal Cahn-Hilliard Functional, SIAM Journal on Applied Mathematics 69(6), pp. 1712-1738 (2009).

Rustum Choksi and Mark A. Peletier, Small Volume Fraction Limit of the Diblock Copolymer Problem: I. Sharp Interface Functional, SIAM Journal on Mathematical Analysis, 42(3):1334-1370 (2010).

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Mark A. Peletier and Marco Veneroni, Non-oriented solutions of the eikonal equation, Comptes rendus-MathÈmatique, SÈrie I, Vol. 348, pp. 1099-1101 (2010).

Mark A. Peletier and Marco Veneroni, Stripe patterns in a model for block copolymers), Mathematical Models And Methods In Applied Sciences, Vol. 20, pp. 843-907 (2010).

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contribution), *Discrete and Continuous Dynamical Systems*, Vol. 5, pp. 183-189 (2012).

Mark A. Peletier and Marco Veneroni, Stripe patterns and the eikonal equation (Oberwolfach report, 2009).

Mark A. Peletier and Matthias R<sup>^</sup>ger, Partial Localization, Lipid Bilayers, and the Elastica Functional (math-ph/0607024), *Archive for Rational Mechanics and Analysis*, 193, pp 475-537 (2009) online at <http://dx.doi.org/10.1007/s00205-008-0150-4> (Note that equation (1.1) of the ARMA file is wrong; see the arXiv file for the correct equation)

Matthias R<sup>^</sup>ger and Mark A. Peletier, Cell membranes, Lipid Bilayers, and the Elastica Functional, *Proc. Appl. Math. Mech.* 6, 11-14 (2006)

Yves van Gennip and Mark A. Peletier, Copolymer-homopolymer blends: global energy minimisation and global energy bounds (arXiv:0704.3222), *Calculus of Variations and PDE* 33(1), pp. 75-111 (2008)

Yves van Gennip and Mark A. Peletier, Stability of monolayers and bilayers in a copolymer-homopolymer blend model (arXiv:0710.3298), *Interfaces and Free Boundaries* 11, pp. 331-373 (2009)

Yves van Gennip and Mark A. Peletier, The H-1-norm of tubular neighbourhoods of curves, *ESAIM Control, Optimization, and Calculus of Variations*, 17, pp. 131-154 (2011)

### **On applications of mathematics in the Life Sciences**

Marcus J. Tindall, Mark A. Peletier, Natascha Severens, Dirk J. Veldman, and Bas A. J. M. de Mol, Understanding post-operative temperature drop in cardiac surgery: a mathematical model, *Mathematical Medicine & Biology* 25(4), pp. 323-335 (2008).

Robert Planqu<sup>^</sup>E, Nicholas F. Britton, Nigel R. Franks, and Mark A. Peletier, The Adaptiveness of Defence Strategies Against Cuckoo Parasitism ( ps | pdf ), *Bulletin of Mathematical Biology*, Vol. 64, pp. 1045-1068 (2002)

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Joke G. Blom and Mark A. Peletier, A Continuum Model of Lipid Bilayers, *European Journal of Applied Mathematics*, Vol. 15, pp. 487-508 (2004)

Mark A. Peletier, Hans V. Westerhoff, and Boris N. Kholodenko, Control of Spatially Heterogeneous and Time-varying Cellular Reaction Networks: A New Summation Law (math.AP/0211111), *Journal of Theoretical Biology*, Vol. 225, pp. 477-487 (2003)

Christof Francke, Hans V. Westerhoff, Joke G. Blom, and Mark A. Peletier, Flux control of the bacterial phosphoenolpyruvate:glucose phosphotransferase system and the effect of diffusion, presented at the 10th BTK meeting, 7-10 september 2002, Bordeaux; *Molecular Biology Reports*, Vol. 29, pp. 21-26 (2002)

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Mark A. Peletier, Sequential Buckling: A Variational Analysis (160 kB), SIAM Journal on Mathematical Analysis, Vol. 32, pp. 1142-1168 (2001); link to the paper on the SIAM web site

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Giles W. Hunt, M. Ahmer Wadee, and Mark A. Peletier, Friction Models of Kink-Banding in Compressed Layered Structures (410 kB), Proceedings of the 5th International Workshop on Bifurcation and Localization in Soils and Rock, Perth, Australia (1999)

M. Ahmer Wadee, Giles W. Hunt, and Mark A. Peletier, Kink Band Instability in Layered Structures (400 kB), Journal of Mechanics and Physics of Solids, Vol. 52, p. 1071-1091 (2004)

## **On Newton's problem of the body of minimal resistance**

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### **On nonlinear diffusion**

I. A. Guerra and M. A. Peletier, Self-Similar blow-up for a diffusion-attraction problem (math.AP/0404283), *Nonlinearity*, Vol. 17, pp. 2137-2162 (2004).

C. J. van Duijn, I. A. Guerra, and Mark A. Peletier, Global Existence Conditions for a Non-local Problem Arising in Statistical Mechanics, *Advances in Differential Equations*, Vol. 9, pp. 133-158 (2004).

C. J. van Duijn, I. A. Guerra, and Mark A. Peletier, Asymptotic Results for Injection of Reactive Solutes from a Three-Dimensional Well, *Journal of Mathematical Analysis and Applications*, Vol. 260, pp. 367-383 (2001).

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