

## Publications of Jean-Pierre Vilotte

Seismology Laboratory  
Institut de Physique du Globe de Paris  
4, Place Jussieu – 75252 Paris cedex 05  
Phone: (33) 1 44 27 38 88 ; Fax: (33) 1 44 27 48 94

- [1] Jean-Pierre Vilotte, Marc Daignières, and Raul Madariaga. Numerical modelling of intraplate deformation: simple mechanical models of continental collision. *J. Geophys. Res.*, 87:10709–10728, 1982.
- [2] Gunther Lang, Jean-Pierre Vilotte, and H.J. Neugebauer. Relaxation of the earth after a dip-slip earthquake: dependance on rheology and geometry. *Phys. Earth Planet. Int.*, 37:260–275, 1984.
- [3] Jean-Pierre Vilotte, Marc Daignières, and O.C. Zienkiewicz. The role of a heterogeneous inclusion during continental collision. *Phys. Earth Planet. Int.*, 37:236–259, 1984.
- [4] O.C. Zienkiewicz, Jean-Pierre Vilotte, S. Toyoshima, and S. Nakzawa. Iterative methods for constrained and mixed approximations, an in expansive improvements of F.E.M. performance. *Computer Methods in Applied Mechanics and Engineering*, 51:3–29, 1985.
- [5] Jean-Pierre Vilotte, Raul Madariaga, Marc Daignières, and O.C. Zienkiewicz. Numerical study of continental collision: Influence of buoyancy forces and an initial inclusion. *Geophys. J. of the Royal Astronomical Society*, 84:279–310, 1986.
- [6] Jean Chery, Marc Daignières, Francis Lucaleau, and Jean-Pierre Vilotte. Strain localization in rift-zones (case of a thermally softened lithosphere): a finite element approach. *Bull. Soc. Geol. de France*, 8:437–443, 1989.
- [7] Jean-Pierre Vilotte, Marc Daignières, Jean Chery, and Raul Madariaga. Some applications of large plastic deformation in large scale geodynamics. In D.R.J. Owen, E. Hinton, and E. Onate, editors, *Computational Plasticity*, pages 1635–1649, Swansea, 1989. Pineridge Press.
- [8] Jean Chery, Francis Lucaleau, Marc Daignières, and Jean-Pierre Vilotte. The deformation of continental crust in extensional zones: a numerical approach. In B. Pinet and C. Bois, editors, *The potential of the deep seismic sounding for hydrocarbon exploration*, pages 35–44, Paris, 1990. Technip.
- [9] Jean Chery, Jean-Pierre Vilotte, and Marc Daignières. Numerical study of the thermo-mechanical evolution of an initially thinned lithosphere under a compressive regime: how to build an asymmetric crustal root such as the Pyrenean one. *Bull. Soc. Geol. de France*, 2:211–218, 1990.
- [10] Jean Chery, Alain Bonneville, Jean-Pierre Vilotte, and David Yuen. Numerical modelling of caldera dynamical behaviour. *Geophysical Journal International*, 105:365–379, 1991.
- [11] Jean Chery, Jean-Pierre Vilotte, and Marc Daignières. Thermo-mechanical evolution of a thinned continental lithosphere under compression: Implications for the Pyrénées. *J. Geophys. R.*, 96:4385–4412, 1991.

- [12] Jean Chery, Francis Lucaleau, Marc Daignières, and Jean-Pierre Vilotte. Large uplift of rift flanks: A genetic link with lithospheric strength. *Earth and Planetary Science Letters*, 112:195–211, 1992.
- [13] Manollo Pastor, Jean-Pierre Vilotte, O.C. Zienkiewicz, Jaime Peraire, and Bertrand Daudré. Failure and localization in soils. In D.R.J. Owen, E. Hinton, and E. Onate, editors, *Computational Plasticity*, Swansea, 1992. Pineridge Press.
- [14] Jean-Pierre Vilotte, Jay Melosh, William Sassi, and G. Ranalli. Lithosphere rheology and sedimentary basins. *Tectonophysics*, 226:89–95, 1993.
- [15] Jean Schmittbuhl, Jean-Pierre Vilotte, and Stéphane Roux. Propagative macrodislocation modes in an earthquake fault model. *European Physics Letters*, 21/3:375–380, 1993.
- [16] Jean Schmittbuhl, Jean-Pierre Vilotte, and Stéphane Roux. Percolation through self-affine surfaces. *Journal of Physics A*, 26:6115–6133, 1993.
- [17] Stéphane Roux, Alex Hansen, H.J. Herrmann, and Jean-Pierre Vilotte. A model for gouge deformation: Implications for remanent magnetization. *Geophysical research Letters*, 20/14:1499–1502, 1993.
- [18] Stéphane Roux, Jean Schmittbuhl, Jean-Pierre Vilotte, and Alex Hansen. Some physical properties of self-affine rough surfaces. *European Physics Letters*, 23/4:277–282, 1993.
- [19] Jean-Pierre Vilotte, Jean Schmittbuhl, and Stéphane Roux. Some physical properties of the Burridge-Knopoff model. In K. Bardham, B.K. Chakrabarti, and A. Hansen, editors, *Non-linearity and breakdown in soft condensed matter*, pages 54–77, Berlin, 1994. Springer Verlag.
- [20] Jean Schmittbuhl, Jean-Pierre Vilotte, and Stéphane Roux. Dynamic friction of self-affine surfaces. *Journal de Physique II*, 4:225–237, 1994.
- [21] Franck Plouraboué, Stéphane Roux, Jean Schmittbuhl, and Jean-Pierre Vilotte. Geometry of contact between self-affine surfaces. *Fractals*, 3:113, 1995.
- [22] Jean Schmittbuhl, Jean-Pierre Vilotte, and Stéphane Roux. Reliability of self-affine measurements. *Physical Review E*, 51:131–147, 1995.
- [23] Jean Schmittbuhl, Stéphane Roux, Jean-Pierre Vilotte, and K.J Måaloy. Interfacial crack pinning: effect of non local interactions. *Physical Review Letters*, 74:1787–1790, 1995.
- [24] Manollo Pastor, O.C. Zienkiewicz, Jean-Pierre Vilotte, Pablo Mira, S. Rubio, and M Huang. Mesh-dependence problems in viscoplastic materials under quasi-static loading. In D.R.J. Owen, E. Hinton, and E. Onate, editors, *Computational Plasticity*, Swansea, 1995. Pineridge Press.
- [25] Jean Schmittbuhl, Jean-Pierre Vilotte, and Stéphane Roux. Velocity weakening friction: A renormalisation approach. *J. Geophys. Res.*, 101:13,911–13,918, 1996.
- [26] Jean Schmittbuhl, Jean-Pierre Vilotte, and Stéphane Roux. Conservative and dissipative events in an earthquake fault model. *J. Geophys. Res.*, 101:27,741–27,764, 1996.
- [27] Pascal Joly, Dimitri Komatitsch, and Jean-Pierre Vilotte. The solution of the wave equation by wavelets basis approximation. In Proceedings of the 1st European *Conference on Numerical Mathematics and Advanced Applications*, Paris, 1996. INRIA.

- [28] Dimitri Komatitsch and Jean-Pierre Vilotte. The Spectral Element Method: An efficient tool to simulate the seismic response of 2-D and 3-D geological structures. *Bull. Seism. Soc. Am.*, 88:368–392, 1998.
- [29] Dimitri Komatitsch, Jean-Pierre Vilotte, R. Vai, J.M. Castillo-Covarrubias, and F.J. Sánchez-Sesma. Spectral element approximation of elastic waves equations: application to 2-D and 3-D seismic problems. *Int. J. Num. Meth. Engng.*, 45:1139–1164, 1999.
- [30] R. Vai, J.M. Castillo-Covarrubias, F.J. Sánchez-Sesma, Dimitri Komatitsch, and Jean-Pierre Vilotte. Elastic wave propagation in an irregularly layered medium. *Soil Dyn. Earthquake Engng.*, 18:11–18, 1999.
- [31] Jean Schmittbuhl and Jean-Pierre Vilotte. Interfacial crack front wandering: influence of quenched noise correlations. *Physica A*, 270:42–56, 2000.
- [32] Hugo Perfettini, J. Schmittbuhl, and J.-P. Vilotte. Slip correlations on a creeping fault. *Geophys. Res. Lett.*, 28(10):2133–2316, 2001.
- [33] L. Staron, J.-P. Vilotte, and F. Radjai. Friction and mobilization of contacts in granular numerical avalanches. In *Powders and Grains*, pages 451–454, Amsterdam, 2001. A. A. Balkema Publishers.
- [34] Y. Capdeville, C. Larmat, J.-P. Vilotte, and J.-P. Montagner. A new coupled Spectral Element and Modal Solution method for global seismology : a first application to te scattering induced by a plume-like anomaly. *Geophys. Res. Lett.*, 29:10,1029, 2002.
- [35] Jean-Paul Ampuero and Jean-Pierre Vilotte. Nucleation of rupture under slip dependent friction law: simple models of fault zone. *J. Geophys. Res.*, 107 B12, 2002. 10.1029/2001JB00452.
- [36] L. Staron, J.-P. Vilotte, and F. Radjai. Pre-avalanche instabilities in a tilted granular pile. *Phys. Res. Lett.*, 89:204302, 2002.
- [37] F. Bouchut, M.O. Bristeau, A. Mangeney-Castelnau, B. Perthame, and J. P. Vilotte. A new model of St-Venant and Savage-Hutter type for gravity driven shallow water flows. *C.R. Acad. Sci. Paris, série I*, 336:531–536, 2003.
- [38] Yann Capdeville, Emmanuel Chaljub, Jean-Pierre Vilotte, and J.P. Montagner. Coupling the spectral element method with a modal solution for elastic wave propagation in realistic 3D global earth models. *Geophys. J. Int.*, 152,1:34–68, 2003.
- [39] Emmanuel Chaljub, Yann Capdeville, and Jean-Pierre Vilotte. Solving elastodynamics in a fluid-solid heterogeneous sphere : a parallel Spectral Element approximation on non-conforming grids. *J. Comp. Phys.*, 187,2:457–491, 2003.
- [40] G. Chambon, J. Schmittbuhl, A. Corfdir, J.-P. Vilotte, and S. Roux. Shear with comminution of a granular material : Microscopic deformations outside the shear band. *Phys. Rev. E*, 68:011304, 2003.
- [41] J. Schmittbuhl, A. Delaplace, K.J. Måløy, H. Perfettini, and J.-P. Vilotte. Slow crack propagation and slip correlations. *PAGEOPH*, 160(5-6):961–976, 2003.
- [42] A. Mangeney, J.P. Vilotte, M.O. Bristeau, B. Perthame, S. Yernini, and C. Simeoni. Numerical modelling of avalanches based on saint-venant equations using kinetic scheme. *J. Geophys. Res.*, 108 B11, 2003. 10.1029/2003JB002435.
- [43] L. Staron, J.-P. Vilotte, and F. Radjai. Numerical investigation of the stability limit of a granular slope. In J.F. Labuz and A. Dresher, editors, *Proceedings of the IWBIG 2002*, 2003.

- [44] A. Fournier, H.-P. Bunge, R. Hollerbach, and J.-P. Vilotte. Building a Spectral Element geodynamo model : the axisymmetric Navier-Stokes kernel. *J. Geophys. Int.*, 156:682–700, 2004.
- [45] E. Lajeunesse, A. Mangeney, and J. P. Vilotte. Spreading of a granular mass on an horizontal plane. *Phys. of Fluids*, 16:2371–2381, 2004.
- [46] S. Deboeuf, O. Dauchot, L. Staron, J.-P. Vilotte, and A. Mangeney. Memory of the unjamming transition during cyclic tiltings of a granular pile,. *Phys. Rev. E*, 2005. cond-mat/0506497, in press.
- [47] S. Deboeuf, O. Dauchot, L. Staron, J.-P. Vilotte, and A. Mangeney. Evolution of the contact network during tilting cycles of a granular pile under gravity. In *Powders and Grains*, pages 105–108, Amsterdam, 2005. A. A. Balkema Publishers.
- [48] Gaetano Festa and J.-P. Vilotte. The Newmark scheme as a velocity-stress time staggering: An efficient PML for spectral element simulations of elastodynamics. *Geoph. J. Int.*, 161(3):789–812, 2005.
- [49] G. Festa, E. Delavaud, and J.-P. Vilotte. Interaction between surface waves and absorbing boundaries in 2D numerical simulations of wave propagation in geological basins. *Geophys. Res. Lett.*, 2005. in press.
- [50] A. Fournier, H.-P. Bunge, R. Hollerbach, and J.-P. Vilotte. A Fourier-spectral element algorithm for thermal convection in rotating axisymmetric containers. *J. Comp. Phys.*, 204:462–489, 2005.
- [51] A. Mangeney, F. Bouchut, J.-P. Vilotte, E. Lajeunesse, A. Aubertin, and M. Pirulli. On the use of Saint-Venant equations to simulate the spreading of a granular mass. *J. Geophys. Res.*, 2005. in press.
- [52] D. Mercerat, J.-P. Vilotte, and F.J. Sánchez-Sesma. Triangular Spectral Element simulation of 2D elastic wave propagation using unstructured triangular grids. *Geophys. J. Int.*, 2005. in press.
- [53] L. Staron, F. Radjai, and J.-P. Vilotte. Granular micro-structure and avalanche precursors. In *Powders and Grains*, pages 831–835, Amsterdam, 2005. A. A. Balkema Publishers.
- [54] L. Staron, J.-P. Vilotte, and F. Radjai. Multi-scale analysis of the stress state in a granular slope in transition to failure. *cond-mat/0506497, Eur. Phys. J.*, 2005. in press.
- [55] J. P. Vilotte, H. Rendon, J.M. Schmitz, M. Sobiesiak, J. P. Ampuero, V. Rocabado, and F. Audeard. Seismicity, earthquake scenario and seismic response in Caracas, Venezuela. *Geophys. J. Int.*, 2005. submitted.