

Short scientific visits

24–28 March 2008:

**Dr Mario Chávez from UNAM visited Daresbury Laboratory
Report of Activities**

- ▶ Presented the seminar “On earthquake simulations: theoretical and computational approach.”
- ▶ Installed a 3D parallel finite difference code for the simulation of synthetic seismograms on the supercomputers BlueGene P, HPCx, and HECToR of the Daresbury Laboratory.
- ▶ Performed test runs of the mentioned code in the 3 supercomputers.
- ▶ Obtained results with the mentioned code for the realistic 3D modeling of the 19 09 1985 Michoacan earthquake using 1024 processors of the supercomputer HECToR .

18–26 May 2008:

Prof Jorge Zubelli from IMPA visited Université Pierre et Marie Curie

- ▶ Gave the seminar “On the inverse problem for structured population models” and prepared Sergei Silva’s research topic with Joel Frelat.

3–26 June 2008:

Dr Eric Clément from École Supérieure de Physique et Chimie Industrielles visited University of Chile

- ▶ Gave the short course “Mechanics of Granular media”
- ▶ Gave a seminar on “Injection in reorganizable porous media”
- ▶ This eventually led Eric Clément to attract a grantee from DFI to ESPCI: Jocelyn Dunstan

21 June–6 July 2008:

Prof Oscar Orellana from Universidad Técnica Federico Santa Maria visited UNAM

1. Gave an intensive course of one week on advanced aerodynamics, including the following topics:
 - ▶ Euler equations, irrotational and incompressible fluids, complex variable fluid dynamics
 - ▶ The vortex sheet problem and the Birkhoff-Rott equation
 - ▶ The fundamental equations of aerodynamics
 - ▶ Prandtl’s classic lifting-line theory
 - ▶ Improvements on the accuracy of calculations with a modern adaptation of Prandtl’s classic lifting line theory.

There were about 15 or 20 students per day.

2. Gave the seminar "On the circular vortex sheet problem, complexification, singularity formation and critical time".
3. Carried out research about the transmitted and reflected wave from a discontinuous potential in the Schroedinger equation.
4. Collaborated with Dr Susana Gomez

17 July 2008:

Dr Lorena Barba visited Daresbury Laboratory

- ▶ Seminar on "Opportunities in petaflop computing"

2–24 September 2008:

Dr Mario Chavez from UNAM visited Daresbury Laboratory

- ▶ Gave the seminar "3D synthetic seismograms of the 12-05-2008 ms 7.9 Sichuan earthquake"
- ▶ Continuing working with D. Emerson and M. Ashworth, on the optimization of 3D parallel finite difference code for the simulation of synthetic seismograms..
- ▶ To work on two papers: one about the 3D modeling of the Michoacan 1985 and the other on the Sichuan 12 05 2008 earthquakes.

11–13 November 2008:

Dr Agnès Maurel from École Supérieure de Physique et Chimie Industrielles visited University of Bristol

- ▶ Seminar on "Turbulence generated by vortex burst"

9–21 December 2008:

Dr Agnès Maurel visited University of Chile

- ▶ Seminar on "Study of the Trapped modes in an experiments of surfaces waves"
- ▶ This eventually led Agnes Maurel to recruit a grantee from DFI, thanks to what Jaime Zúniga spent 5 months in ESPCI the next year.

10 December–7 January 2008:

Dr Mario Chavez from UNAM visited Daresbury Laboratory

- ▶ Gave the seminar "3D synthetic seismograms of the 12-05-2008 ms 7.9 Sichuan earthquake – Latest results"
- ▶ This eventually led to the following results:
 - Chavez, M, Cabrera, E, Madariaga, R, Perea, N, Moulinec Ch, Emerson, D, Ashworth, M, Salazar, A, (2008), Benchmark Study of a 3D parallel code for the propagation of large subduction earthquakes, in Lecture Notes in Computer Science, LNCS 5205, Springer.

- Chavez, M, Cabrera, E, Chen, H, Perea, N, Salazar, A, Emerson, D, Ashworth, M, Moulinec, Ch, Wu, M, y Zhao, G, (2008), 3D wave propagation modeling of the 12 05 2008 Sichuan Ms 7.9 earthquake, XIV World Conference on Earthquake Engineering, Beijing, China, CD.
- M. Chavez, E. Cabrera, H. Chen, N. Perea, A. Salazar, D. Emerson, M. Ashworth, Ch. Moulinec, M. Wu, G. Zhao, (2008), Modeling of the 3d wave propagation of the Sichuan Ms 7.9 earthquake of 12 05 08, American Geophysical Union Fall Meeting, San Francisco, USA, CD.
- Ashworth, M, Chavez, M, Cabrera, E, (2009), Exploiting extreme processors counts on Cray XT systems with high resolution seismic wave propagation experiments, CUG Proceedings (May 2009)

24 January–7 February 2009:

Prof Rodrigo Soto visits École Supérieure de Physique et Chimie Industrielles

- ▶ Seminar on “Hydrodynamic interactions in suspensions of swimming bacteria”
- ▶ Work closely with his tutee, Jocelyn Dunstan, and her local supervisor, Eric Clément, on the experimental results of the work carried out previously in Chile.

6 June–11 July 2009:

Prof Rodrigo Soto visits École Supérieure de Physique et Chimie Industrielles

- ▶ Finish the collaboration with his tutee, Jocelyn Dunstan, and her local supervisor, Eric Clément, on their experimental results.