IUTAM Symposium on
Bluff Body Wakes and Vortex-Induced Vibrations

13-16 June 2000, Marseille, France

Final programme

- 05 June 2000 -

* presenting author	Invited Lecture: 40 min.	Poster Presentation: 3 min.
(P) poster	Oral Presentation: 20 min.	(incl. questions & discussion)

Tuesday 13 June 2000

09:00 - 12:00 **Registration**

12:00 - 14:00 **Lunch**

14:00 - 14:10 **Welcome**

14:10 - 14:30 **Opening Address** by T. Tatsumi (Japan, IUTAM Bureau)
Fluid mechanics in the coming century

14:30 - 16:00 **Opening Lectures**

A. Leonard (USA): *Flow-induced vibration of a circular cylinder: insights from computational experiments*

A. Roshko (USA): *Aspects of the classic VIV problem*

16:00 - 16:30 **Coffee Break**

16:30 - 18:40 ***Session:*** **Vortex-Induced Vibrations**

*Govardhan, R. & Williamson, C. H. K.
Response and vortex formation modes of an elastically-mounted cylinder at high and low mass-damping

*Gharib, M. R. & Leonard, A.
Vortex-induced vibration, mass ratio effects and introducing effective stiffness

*Guilmineau, E. & Queutey, P.
Dynamics simulation of a hydroelastic structure with very low mass and damping

*Blackburn, H. M., Govardhan, R. & Williamson, C. H. K.
A complementary numerical and physical investigation of vortex-induced vibration

*Hover, F. S. & Triantafyllou, M. S.
Free vibrations of a cylinder with upstream wake interference

*Stansby, P. K. & Rainey, R. C. T.
On the big dynamic response of a rotating cylinder in a current

Etienne, S. & Scolan, Y.-M.
***(P)** Vortex shedding and induced vibrations of multiple cylinders at arbitrary Reynolds numbers*

Kamemoto, K. & *Zhu, B.
***(P)** Oscillation characteristics of a circular cylinder in a uniform flow with intermittent touching to a close structure*

19:30 **Dinner**

Wednesday 14 June 2000

08:45 - 09:25 **Invited Lecture** by A. E. Perry* & M. S. Chong (Australia)
Interpretation of flow visualization

09:25 - 10:15 ***Session:* Sphere Wakes 1**

*Jauvtis, N., Govardhan, R. & Williamson, C. H. K.
Vortex-induced vibrations of a sphere

*Thompson, M. C., Leweke, T. & Provansal, M.
Dynamics of sphere wake transition

Kiura, T. & *Higuchi, H.
***(P)** Knuckleball aerodynamics: passive alteration of three-dimensional wake-structure interactions*

*Park, J., Choi, H. & Jeon, W.
***(P)** Active control of flow over a sphere for drag reduction using electro-magnetic actuators*

*Johansson, P. & George, W. K.
***(P)** Application of equilibrium similarity analysis on the axisymmetric wake*

10:15 - 10:45 **Coffee Break**

10:45 - 11:25 **Invited Lecture** by M. Kiya*, O. Mochizuki & H. Ishikawa (Japan)
Interaction between vortex rings and a separated shear layer: towards active control of separation zones

11:25 - 12:20 ***Session:* Wake Control 1**

*Koumoutsakos, P. & Milano, M.
Active control algorithms for cylinder drag minimization

*Aubry, N., Chen, Z. & Li, F.
Closed loop control of wake flows

*Mathelin, L., Bataille, F., Brillant, G. & Lallemand, A.
***(P)** Blowing impact on the wake of a circular cylinder*

*Amitay, M. & Glezer, A.
***(P)** Flow control on bluff bodies using synthetic jet technology*

Panchapakesan, N. R., Bulbeck, J. & *Soria, J.
***(P)** Control of square trailing edge wake flow*

12:20 - 14:30 **Lunch**

14:30 - 15:10 **Invited Lecture** by T. Sarpkaya (USA)
Time-dependent flow about solid and perforated cylinders

15:10 - 16:30 ***Session:* Forced Oscillations**

*Carberry, J., Sheridan, J. & Rockwell, D. O.
Forces and wake modes of an oscillating cylinder

*Jeon, D. & Gharib, M.
On circular cylinders undergoing two-degree-of-freedom forced motions

Anagnostopoulos, P.
Numerical visualization of aperiodic vortex structures in the wake of a transversely excited cylinder

*Guerouache, M. S. & Peerhossaini, H.
***(P)** Numerical study of two-dimensional flow past an oscillating cylinder at low Reynolds number*

*Chew, Y. T., Luo, S. C. & Guo, T.
***(P)** A new formula for in-line force calculation of oscillatory flow past a circular cylinder*

*Rodriguez, O. & Pruvost, J.
***(P)** Wakes of an oscillating cylinder*

*Qian, L. & Vezza, M.
***(P)** Development of a vorticity based method for studying bluff body flow problems*

*Choi, H. & Choi, S.
***(P)** Effect of periodic rotary oscillation on flow past a circular cylinder*

Jarża, A. & *Podolski, M.
***(P)** Random and periodical velocity fluctuations in vortex formation region behind cylinder in lock-on regime*

16:30 - 17:00 **Coffee Break**

17:00 - 18:40 ***Session:* Flexible Structures**

*Willden, R. H. J. & Graham, J. M. R.
Numerical prediction of VIV on long flexible circular cylinders

*Pesce, C. P., Fujarra, A. L. C., Flemming, F. & Williamson, C. H. K.
Vortex-induced vibrations of a flexible cantilever

*Lucor, D. & Karniadakis, G. E.
Vortex dislocations, vortex splits and forces distribution in flows past bluff bodies

*Kirby, R. M. & Karniadakis, G. E.
Flow past a bluff body with a rigid and a flexible splitter plate

*Allen, J. & Smits, A.
Energy harvesting eel

19:30 **Dinner**

21:30 **Entertainment**

Thursday 15 June 2000

08:40 - 09:20 **Invited Lecture** by D. O. Rockwell (USA)
Flow-structure interactions in presence of a free surface

09:20 - 10:40 ***Session:* 3D Effects**

*Owen, J. C., Bearman, P. W. & Szewczyk, A. A.
The influence of streamwise vorticity on von Kármán vortex shedding

*Darekar, R. M. & Sherwin, S. J.
Flow past a bluff body with a wavy separation line

*Andersson, H. I., Jenssen, C. B. & Vallès, B.
Oblique vortex shedding behind tapered cylinders

*Higuchi, H. & Hiramoto, R.
Wake interactions behind a non-parallel pair of circular cylinders

10:40 - 11:00 **Coffee Break**

11:00 - 12:00 ***Session:* Fundamentals 1**

Norberg, C.
Flow around a circular cylinder: fluctuating lift

Noca, F.
Inversion of flow-based force formulations for determining “bluff-body” shapes, locations, and motions

*Wang, A.-B., Trávnícek, Z. & Wu, M.-H.
***(P)** Oblique and parallel vortex shedding of a heated circular cylinder at low Reynolds number*

*Shuyang, C., Ozono, S. & Hirano, K.
***(P)** Vortex shedding from a circular cylinder placed in a linear shear flow at high Reynolds number*

*Chaplin, J. R. & Teigen, P.
***(P)** Drag on a vertical cylinder at a free surface*

*Luo, S. C., Chew, Y. T. & Ng, Y. T.
***(P)** Hysteresis phenomenon in the galloping oscillation of a square cylinder*

*Buresti, G. & Lombardi, G.
***(P)** Characterization of the wake flow field of triangular prisms in cross-flow using wavelet-based techniques*

Weiss, J., Lecordier, J. C., Godard, G. & *Paranthoën, P.
***(P)** Dispersion of heat from a line source located in the near wake of a circular cylinder at low Reynolds number*

12:00 - 13:10 ***Session:* Wake Manipulation**

*Beal, D. N., Techet, A. H., Hover, F. S., Yue, D. K. P. & Triantafyllou, M. S.
Vortex modulation by an oscillating foil

*Dalton, C., Xu, Y. & Owen, J. C.
The suppression of the oscillating lift due to vortex shedding at moderate Reynolds numbers for a circular cylinder

Bouak, F. & *Lemay, J.
Flow around two circular cylinders in crossflow: simultaneous measurements and analysis of unsteady lift and drag forces

Flatschart, R. B., *Meneghini, J. R. & Saltara, F.
***(P)** Numerical simulation of flow interference between four cylinders in various arrangements*

*Lalanne, L., Le Guer, Y. & Creff, R.
***(P)** Experiments on the passive control of a confined jet impinging a heated bluff body*

Bruneau, C.-H. & *Mortazavi, I.
***(P)** Passive control of flows past an obstacle using porous media*

13:10 - 15:00 **Lunch**

15:00 - 20:00 **FREE TIME**

15:00 **Shuttle bus from Hotel Vacanciel to Marseille, Old Port**

19:00 **Shuttle bus from Hotel Vacanciel to banquet location**

20:00 - 23:00 **Banquet at *"Les Trois Forts"*, Marseille Old Port**

23:00 **Buses back to the hotel**

Friday 16 June 2000

09:00 - 10:00 ***Session:* Sphere Wakes 2**

*Bouchet, G., Dušek, J., Ghidersa, B. & Woehl, P.
Axisymmetry breaking in the wake of a fixed and a free falling sphere

Michalski, C., *Schouveiler, L. & Provansal, M.
Periodic wakes of spheres and low aspect ratio cylinders

Brücker, C.
Spatio-temporal reconstruction of the unsteady wake of axi-symmetric bluff bodies via time-recording DPIV

10:00 - 10:20 **Coffee Break**

10:20 - 11:00 **Invited Lecture** by P. A. Monkewitz (Switzerland)
Modelling of vortex shedding from cylinders with span-wise non-uniformities

11:00 - 12:00 ***Session:* Fundamentals 2**

*Le Gal, P., Nadim, A. & Thompson, M.
Forced response of the subcritical Landau equation: application to vortex shedding from a cylinder

Villermaux, E.
On the Strouhal-Reynolds dependence in the Bénard-Kármán problem

*Pier, B. & Huerre, P.
Nonlinear frequency selection in wakes

12:00 - 13:30 **Lunch**

13:30 - 14:10 **Invited Lecture** by K. Hourigan* & M. C. Thompson (Australia)
Flow around elongated bodies: flow structure and resonance

14:10 - 15:30 ***Session:* 3D Instability**

Braza, M.
Successive mode changes in 3D transition to turbulence in the wake of circular cylinder by means of Direct Numerical Simulation

*Thompson, M. C., Leweke, T. & Williamson, C. H. K.
Transition in bluff body wakes: is the initial transition elliptic?

*Siqueira, C. L. R., Meneghini, J. R. & Saltara, F.
Three-dimensional simulation of the flow past a circular cylinder at low Reynolds numbers

Cadot, O.
Viscoelastic effects on the two- and three-dimensional structure of the wake of a cylinder

*Julien, S. & Chomaz, J.-M. & Lasheras, J.
Study of secondary instabilities in plane wakes

15:30 - 15:50 **Coffee Break**

15:50 - 16:50 ***Session:* Wake Control 2**

Mittal, S.
Finite element computation of flows past circular cylinder

*Posdziech, O. & Grundmann, R.
Electromagnetic control of flow around an infinitely long cylinder in the transition regime

*Protas, B. & Styczek, A.
Optimal feedback control of the cylinder wake

16:50 - 17:00 **Closing Remarks – End of Symposium**

17:30 **Shuttle bus to the Saint-Charles railway station in Marseille**