

Following the spirit of the past five meetings held in Japan, Australia, United States, Germany and Canada, the



# BBAA VI

6th International Colloquium  
on Bluff Bodies Aerodynamics and Applications



will be held in Milano, ITALY, from Sunday, July 27 to Thursday, July 31, 2008

The colloquium is a well established broad forum for exchanging results on the latest advances in the study of the separated flow around Bluff Bodies both in terms of Fundamentals as well as Applications.

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## INTRODUCTION AND COLLOQUIUM SCOPE

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The scientific and general organisation of BBAA VI Colloquium are coordinated in agreement with IAWE. The contributions for the sixth BBAA Colloquium will be focused on Fundamentals and Applications especially in the following areas:

### Fundamentals:

- Vortex shedding and wakes
- CFD and numerical simulations techniques
- Fluid-structure interaction

### Applications:

- Cables
- Bridges
- Buildings
- Vehicles and Sports

A special session on high-speed train aerodynamics will be organized.

## FUNDAMENTALS

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### Vortex shedding and wakes

Vortex shedding problems and vortex induced vibrations are a key feature in the field of bluff bodies aerodynamics. The area involves the physics of the separated flow, the dynamic effects induced by vortex shedding and the forces acting on the body invested by the blowing fluid. This subject can be approached under numerical, analytical and experimental point of view and it is strictly connected to various industrial field as oil industry and power utilities.

### CFD and numerical simulation techniques

Today it is easy to have powerful calculators able to solve, in a reasonable time, CFD models of flow field around bluff bodies. It is well known that separated flow are the most challenging, and therefore exciting, numerical problems numerical fluid-dynamics. BBAA VI will give the opportunity to compare numerical and experimental approach to the same problems.

### Fluid-structure interaction

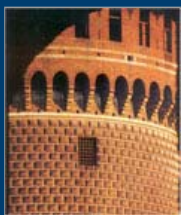
The external geometry, i.e. the interface geometry seen by a blowing fluid, of several structures can be considered as bluff bodies; in engineering practice it is necessary to compute the response of this structures to wind or water actions, defining suited analytical and numerical tools.

## APPLICATIONS

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### Cables

Cable aerodynamics involves several engineering applications as overhead transmission lines, mooring lines and risers or bridge stays and hangers, the problem is very complex because the cables could



experience different type of fluid-structure interactions, as vortex induced vibrations, galloping, wake interaction and rain wind vibrations.

### **Bridges**

Bridges and wind engineering grew together in the last century, so it is not possible to face fluid structure interactions problems without considering bridges. Nowadays the deck girders and bridge towers are becoming longer and higher, i.e. more slender, and the flow induced dynamic is becoming more and more important in defining bridge and stays design.

### **Buildings**

Wind effects are significant in determining global forces and cladding loads on both small and tall buildings. Typically a building is a bluff body and its interaction with the wind involves the physics of the separated flow with effects on the pressure distribution and hence on the global force. Moreover separation on the surface induce negative pressure or very high overpressure that can produce buckling problems.

### **Vehicles and Sports**

Vehicles aerodynamics is a major industrial application of bluff bodies knowledge especially because a great interest is addressed to side wind effects on both road and rail vehicles which can be at risk of a wind-induced accident especially on exposed sites such as embankments, viaducts and bridges. In these last years, methods and techniques for assessing the safety road and rail vehicles in high winds have been proposed by different authors and European project and the cross wind safety represents nowadays an open and very interesting international subject.

### **Symposium on high speed train aerodynamic**

In the field of high speed train aerodynamics, there are currently open issues which have direct impact on the safety and reliability of high speed railway operation. The cross-wind effects on high speed trains are one of the most critical problems especially for risk of vehicle overturning and track instability. Moreover, in these last years, the cross wind safety theme has risen a great importance since a "Technical Specification for Interoperability", covering also this specific topic, needed. For these reasons, the European Transportation Authorities and manufacturers have decided to joint into international cooperation, before the Cross Wind Deufrako project and now the AOA (Aerodynamics in Open Air) project. Between the objectives there are the set up of common methodologies for vehicle and line aerodynamic characterization and pilot applications of results to evaluate the practicability of method.



## **ORGANIZATION AND HOST COMMITTEE**

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The Colloquium is organized by the Research Centre for Wind Engineering (CIRIVE) of Politecnico di Milano, and will be hosted at Campus Bovisa Politecnico by the Faculty of Industrial Engineering.

G. Diana, *Conference Chairman, Italy*  
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F. Cheli, *Italy*  
F. Fossati, *Italy*  
S. Giappino, *Italy*  
S. Muggiasca, *Italy*  
D. Rocchi, *Italy*  
L. Rosa *Italy*  
A. Zasso *Italy*



## **INTERNATIONAL ADVISORY COMMITTEE**

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D. Sumner, *Canada*,



L. Vigevano, *Italy*  
T. Yagi, *Japan*

## CALL FOR PAPERS

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Authors intending to present a paper at BBAA VI are invited to submit an extended abstract in English language with a length of 1000-1500 words. The summary paper may include figures or graphs, but should not exceed 4 A4 pages, since the papers will be selected on the basis of the abstracts submitted, these must contain sufficient information on the problem definition, the scientific approach and on the obtained results.

The summary papers will be reviewed and the papers accepted for presentation will be collected in a volume of summary papers distributed at the Colloquium. The Authors of the papers accepted for presentation will be asked to submit a full paper (up to 16 pages) before the Colloquium scheduled date. The full papers will be collected in a CD enclosed in the summary papers volume distributed at the Colloquium.

The abstract must be accompanied by the following information:

1. Title of the paper
2. Name of the Author(s)
3. Affiliation(s)
4. Contact Person  
Name  
Affiliation  
Complete mailing address  
E-mail address  
Telephone number

## KEY DATES

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Second announcement and Call for Papers **April 2007**  
Submission of four pages summary paper **October 2007**  
Notice of acceptance for presentation **February 2008**  
Submission of the full paper version (up to 16 pages) **June 2008**  
BBAA VI Colloquium **July 2008**



## PROGRAM

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## REGISTRATION AND HOTEL INFORMATION

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To receive regular updates on BBAA VI please preregister by visiting BBAA VI web site:  
<http://bbaa6.mecc.polimi.it> or by email to [bbaa6@mecc.polimi.it](mailto:bbaa6@mecc.polimi.it)

## SOCIAL EVENTS

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## GENERAL INFORMATIONS

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### Language

Official language of the symposium is English.

### Presenting facilities

For oral presentations the following presenting facilities will be provided:

- PC+ beamer
- Overhead projector
- Laser pointer
- Wireless microphone

If you need additional specific presentation hardware, please contact the local organising committee as soon as possible, preferably using the e-mail address: [bbaa6@mecc.polimi.it](mailto:bbaa6@mecc.polimi.it)

The software installed on the PC will consist in Microsoft Powerpoint and Adobe Acrobat Reader.

If you are planning to use another software for your presentation, please also contact the local organising committee. Please note that, in order to minimise time delays during the sessions, **plugging your laptop directly to the beamer will not be allowed** (unless strictly necessary):



you may bring your presentation on a CD or floppy, or USB memory. Our staff will be provided with USB memories to transfer your presentation from your own laptop to the PC used for presentation, but please be aware that not all operative systems are "plug&play" compatible with this kind of hardware. You are invited to check that your presentation is compatible with the software installed on the PC used for presentation, well before the beginning of the session.

Power supply in Italy is the standard European Continental 220 V AC 50 Hz. For poster presentation, a board will be provided to each Author. Authors of posters will be informed in due time about the exact dimensions of the board.

#### **Climate and clothing**

Weather in Milano in middle July is mild/hot (daytime temperatures (Celsius degrees) min 25°C, max 35°C).

For more information see [wunderground.com](http://wunderground.com).

All rooms for the colloquium sessions are air-conditioned. We suggest that you have with you a light pullover, because temperature could become relatively cool in case of bad weather, especially in the evening.

#### **Time zone**

Italy standard time is GMT+1.

#### **Currency and VAT/TAXES**

The European Euro is the unit of currency. VAT is 20% on the purchase price of most items.

#### **Foreign currency exchange and Traveller's checks**

Purchasing of traveller's checks in Euro or US dollars before departure is recommended. Some stores in Italy will accept only Euro in cash only. Foreign currency exchange and cashing of traveller's check can be done at the major banks which can be found easily in Milan. Banks are open from 8:30 to 13:00 and one hour in the afternoon (many banks open from 14:30 to 15:30). Banks are closed on Saturday and Sunday.

#### **Credit Cards**

American Express, Diners, MasterCard and VISA are usually accepted at major stores and hotels in Italy, however, there are some major credit cards which are not accepted at shops, stores and even at hotels in Italy.

#### **Tipping**

Tipping is not necessary. A service charge is included in hotel and restaurant bills, etc.

#### **LOCATION – POLITECNICO DI MILANO**

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Milano is an important centre for culture, industry and finance. The city was founded on 590 b.C. along a road linking the Mediterranean Sea to Northern Europe. Today Milano is the main city of Lombardia, a region of northern Italy, and is well known for industry, culture and fashion. Milano itself, its surroundings and the whole Lombardia region offer magnificent landscapes, with its lakes and mountains, and cities with significant cultural heritage.

The conference will take place at Politecnico di Milano- Campus Bovisa located within the city of Milano, and is very well served by public transportations system to the centre of the town.

The campus is very conveniently located with respect to the international airport of Malpensa (main airport in Milano), as the trains connecting Malpensa to down-town Milano stop just outside the campus.

#### **Politecnico di Milano wind tunnel and CIRIVE**

The Colloquium will be held at the Politecnico di Milano, (Technical University of Milan) in Milano - Bovisa Campus Sud, few kilometres north-west from downtown Milano, and easily reachable either from downtown Milano and from Malpensa Airport by urban transportation.

The Bovisa Campus Sud hosts the Departments of Mechanical Engineering and Aerospace Engineering, together with some of the most outstanding laboratories and research facilities owned by Politecnico di Milano. The same campus also hosts the studies in Mechanical Engineering, Energetic Engineering, Aerospace Engineering, organised in three levels: Bachelor (3-years degree), Master of Science (2-years, following the Bachelor) and PhD (3-years, following the MSc).

Since October 2001 the Politecnico di Milano has a new Wind Tunnel (GVPM). The facility has a dual aim, being designed to provide the highest technological standards for a wide range of applications. In addition, its location in the academic environment of the Politecnico di Milano denotes a strong commitment to the scientific approach. Thus the GVPM is both a research tool and a modern instrument for high-technology industrial applications offering advantageous reciprocal synergies. The GVPM has a special closed-circuit configuration, arranged in a vertical layout with two test rooms in the loop. The larger one is located in the upper part of the loop and is intended for civil engineering testing (Boundary Layer Test Section). The smaller one is located in the lower part of the loop and is suitable for high speed low turbulence tests (Aeronautical test section).

#### **How to reach the Bovisa Campus**

From downtown Milano (Hotel area) by public transportation.

The Bovisa Campus Sud can be easily reached from Milano downtown by public transportation by using "the S Lines" (also called "Passante ferroviario").

From station "Repubblica" or "Garibaldi" of "the S Lines" get on either a train for SARONNO (S1 Line)

MARIANO COMENSE (S2 Line)

BOVISA (S10 Line)

and get down in BOVISA station (the run lasts 8 minutes)

or a train for

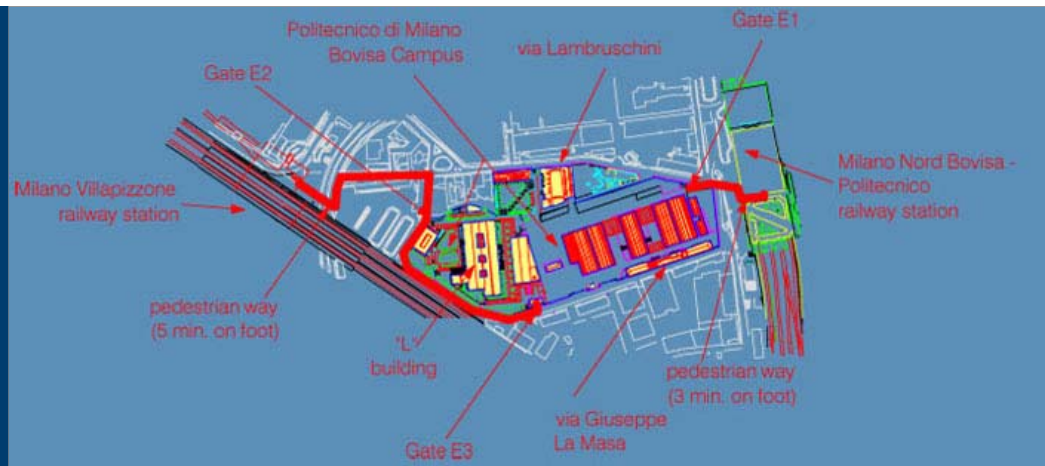
VARESE-GALLARATE (S5 Line)

NOVARA-MAGENTA (S6 Line)

and get down in VILLAPIZZONE station (the run lasts 10 minutes)







#### By taxi

If you are using a taxi instead of public transportation, specify well the following address to the driver  
 Politecnico di Milano,  
 Via La Masa 34,  
 Milano

The taxi will leave you at the main entrance, E3 in the campus map. You will see the "L" building just in front of you on the left.

#### From Malpensa Airport

At the airport get on the train to Milano ("Malpensa Express" one way ticket Eu 9,00). The total time for the travel is 35 minutes, trains leave the airport each 30 min., for departure times refer to the website of the "Ferrovie Nord Milano" ([www.ferrovienord.it](http://www.ferrovienord.it)). Get out of the train in the station "MILANO NORD BOVISA POLITECNICO" (please note that this is NOT the last stop of the train), then, while getting out from the station, turn right, walk down the stairs and enter the gate in front of you (gate E1 in the campus map) then walk (appr. 150 m) to the "L" building, that is the yellow steel building that you will see in front of you at the opposite side of the court.

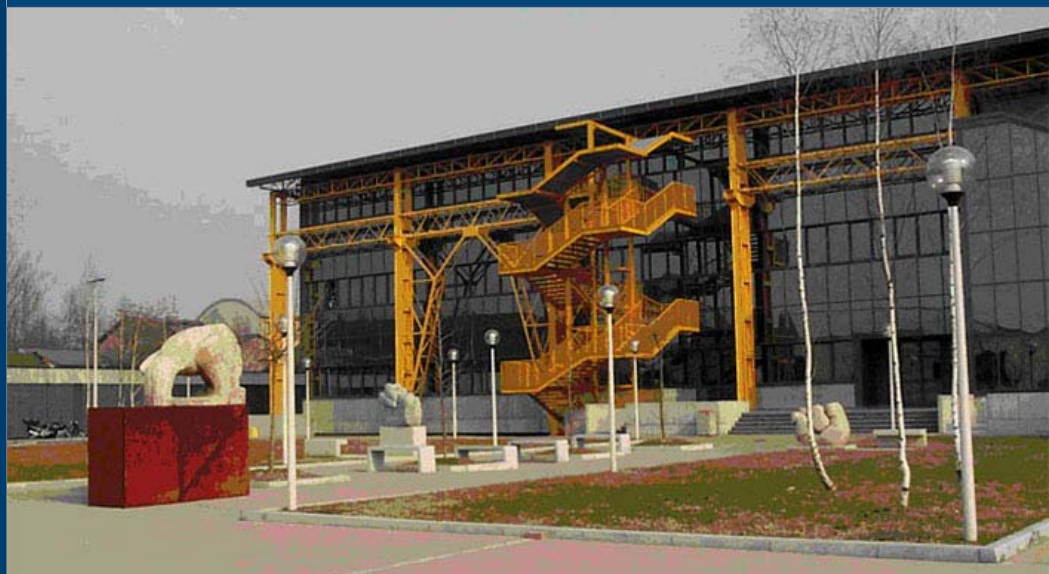
Travelling by taxi from Malpensa will not speed up very much your travel, and will be quite costly (in the range of 40-50 Eu). Anyway, if you prefer to do so, read point 2.

#### From Linate Airport

Travelling from Linate Airport to the Bovisa Campus Sud is a little bit complicated and time consuming. We suggest that you take a bus to the Central Railway Station "Milano Centrale", then take Line 2 of the underground (the "green line"), direction ABBIATEGRASSO, and change in GARIBALDI station (2 stops) to the "S" Lines, then follow instruction at point 1.

#### Bovisa Station name

Due to its long history, slight changes of location, and a certain amount of typical Italian fantasy, the BOVISA station has got many names. The official name is MILANO NORD BOVISA POLITECNICO, but often Milan people call it simply Bovisa. (You can find the Bovisa station named "Bovisa Nord", "Bovisa FN", "Bovisa FNM", "Milano Bovisa", "Milano Nord Bovisa", ...). In any case, the key word is "Bovisa", referring to this key word you will not miss the right stop.

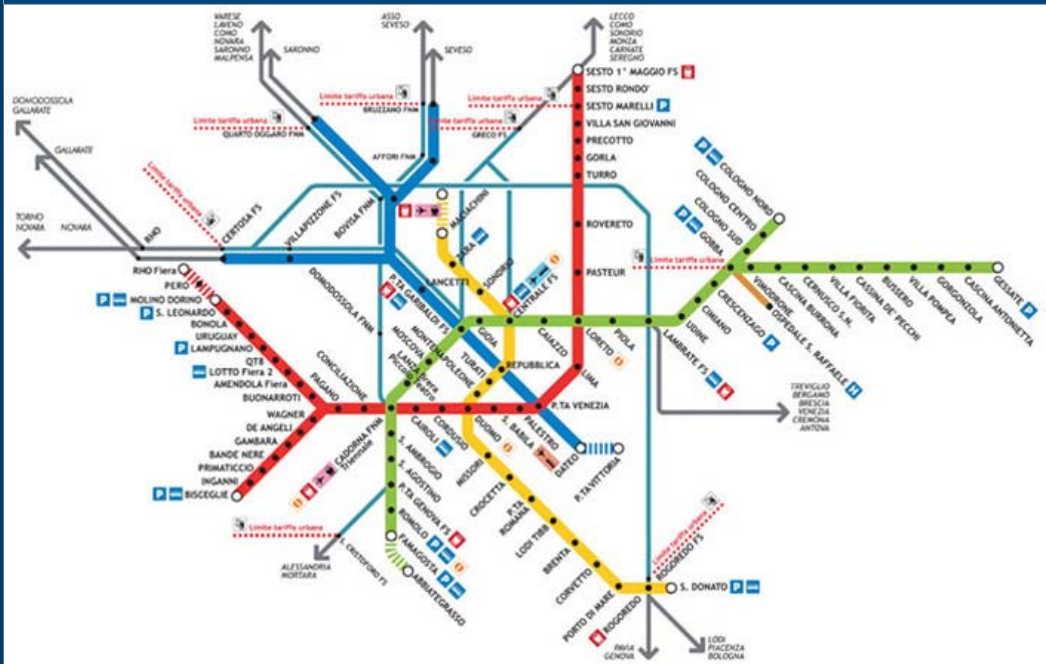


#### Milano urban transportation

Surface and underground urban transportation will allow you easy transfers throughout downtown Milano and to / from the colloquium venue ([www.atm-mi.it](http://www.atm-mi.it)). A map of underground railway lines in Milano is shown below. You can buy tickets (1 Euro each, 10 ticket carnet 9,20 Euros) at any newspaper kiosk / shop, or from automatic ticketing machines. The ticket is valid for 70 minutes on all surface



and underground transport systems, but allows you only one travel in the underground (that is once you get out of the underground, if you want to take again the subway you have to stamp a new ticket). If you take an underground line (line 1, 2 or 3) and then "the S lines", you can use the same ticket, but you have to stamp it again.



#### LINKS

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Politecnico di Milano, [www.polimi.it](http://www.polimi.it)  
Milan Urban Transportation, [www.atm-mi.it](http://www.atm-mi.it)  
Italian Railways, [www.trenitalia.it](http://www.trenitalia.it)  
Ferrovie Nord, [www.fnmgroup.it](http://www.fnmgroup.it)  
Milano Airport, [www.sea-aeroportimilano.it](http://www.sea-aeroportimilano.it)



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Here you can download all the texts of the website  
Site  
Brochure

#### CONTACT US

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