Workshop on

VENOUS HEMODYNAMICS:
medical problems and
mathematical modelling

Date	October 26th, 2011; 08:30-18:00Hrs
Room	*Fondazione Bruno Kessler Conference Hall*, Via Sommarive, 18, Povo, Trento.

This one-day workshop is broadly devoted to mathematical modeling and numerical simulation of venous blood flow and some associated medical conditions, such as CCSVI and Multiple Sclerosis, as recently suggested by Zamboni. From the mathematical modelling and simulation points of view the study of blood flow in veins has so far received much less attention than arterial and other physiological flows. The purpose of this one-day meeting is to bring together a number of experts in the fields of hemodynamics and numerical simulation in order to discuss the state of the art of the subjects involved and to identify some of the main difficulties to be overcome in the near future.

A group academics from the University of Trento, from various departments, reflecting the highly interdisciplinary character of the subject of venous hemodynamics and associated medical conditions (Physics, Mathematics, Engineering), have started to study these problems and to put together research initiatives aimed at understanding the basic mechanisms involved, from a theoretical point of view. Such theoretical studies have a generic character, and as such, may well turn out to be applicable to a wider range of bio-medical problems of current interest to society.

On behalf of this group of academics and associated PhD students I thank all participants for their visit to the University of Trento and for their contribution to the success of the event. The support of FBK-CIRM and the Mathematics Department is gratefully acknowledged.

Professor Eleuterio Toro (PhD, DhC, OBE) Email: toro@ing.unitn

PROGRAMME

08:30-08:50 Arrival and registration at workshop venue

08:50-09:00 Prof Eleuterio Toro. Welcome address

09:00-09:40 Prof Tim Pedley (University of Cambridge, UK). *Modelling blood flow in (giraffe jugular) veins*

09:40-10:20 Dr Leonardo Forzoni (Esaote S.p.A., Firenze, Italy). *Ultrasound Technologies for Head and Neck Venous System Examination*

10:20-10:50 Coffee Break

10:50-11:30 Dr Christian Vergara (University of Bergamo, Italy). *Computational description of human arterial and venous systems: examples of possible applications*

11:30-12:10 Dr Marcella Lagana (Laboratory of Magnetic Resonance Imaging, Fondazione Don Carlo Gnocchi ONLUS, Milan, Italy). *Vascular morphology and hemodynamics: investigations with Magnetic Resonance Imaging*

12:10-12:50 Dr Jordi Alastruey (King's College, London, UK). *One-dimensional modelling of blood flow in the cardiovascular system*

12:50-14:20 Lunch break

14:20-15:00 Prof M Dumbser (University of Trento, Italy). *An efficient semi-implicit method for the simulation of blood flow in arteries*

15:00-15:40 Prof E F Toro (University of Trento, Italy). *On mathematical models and numerical methods for blood flow in vessels with dicontinuous material properties*

15:40-16:10 Tea break

16:10-16:50 Dr Alfonso Caiazzo (Weierstrass Institute for Applied Analysis and Stochastics, Berlin, Germany) *Implicit coupling of dissipative boundary conditions models with projection schemes for Navier-Stokes equations*

16:50-17:30 Mr Matteo Lesinigo (Lausanne, Switzerland). *Mathematical modelling of cerebrovascular and cerebrospinal dynamics*

Further information available from Mr. Augusto Micheletti,
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