TEAM OF FLOW AND TRANSFER MODELING (EMET)

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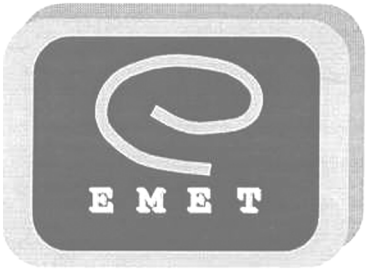

Brief presentation

The Team of Flow and Transfer Modeling (Equipe de Modélisation des Ecoulements et des Transferts, EMET) was created in January 2000 and officially accredited in January 2006. It belongs to the Faculty of Sciences and Technologies (FST) at the Sultan Moulay Slimane University (USMS) of Béni-Mellal (Morocco). 11 members make up the EMET, including 8 teachers researchers (permanent members) and 3 graduate students (nonpermanent members).

Research topics

The topics developed by the EMET are:
− Capillary and natural convections in non-Newtonian fluids;
− Natural, mixed and forced convection heat transfer with or without thermal radiation;
− Flows at low Reynolds number;− Double diffusion with or without Soret effect in porous and clear fluid media;
− Second order modeling of reactive turbulent flows.

Objectives

The industrial systems are often seats of complex flows. For a better optimization of these systems, the fluid mechanics proposes to study and to understand the physical phenomena governing these flows. Thus one is interested in transport of heat or/and mass, turbulence and combustion. These phenomena are not independent each other, but are coupled. In this respect, two approaches can be considered: the experimental approach for the diagnosis and measurements and the numerical calculation approach. This latter offers a double advantage, on the one hand it makes possible the detailed study of these industrial flows and this, by solving the governing equations, which presents a lower cost compared to the former, and on the other hand it informs about the quantities not yet accessible with measurements.
Within this framework, the EMET develops the topics above-mentioned.

Collaborations, national and international

Currently, the EMET is in more or less close collaborations with national (Laboratory of Fluids Mechanics and Energetics, Faculty of Sciences Semlalia, Cadi Ayyad University, Marrakesh, Morocco) and international (Institute for Aerospace Research, National Research Council, Ottawa, Ontario, Canada) scientific organizations. Otherwise, the EMET remains open to any relation with other teams or laboratories concerned with its research area.

Admission terms

To be accepted at the EMET, the candidate for a PhD must have a master's degree in fluid mechanics and transfer phenomena. Moreover, he must have sufficient knowledge of numerical analysis and computer programming.

Opening

The candidate, having obtained his PhD, can be recruited in higher degree teaching or in industrial environments finding interest in his formation.

Some recent scientific contributions

Just below some recent scientific contributions of the EMET.

1. Lamsaadi M., Naïmi M., Hasnaoui M., Bahlaoui A., Raji A. Multiple steady state solutions for natural convection in a tilted rectangular slot containing non-Newtonian power-law fluids and subjected to a transverse thermal gradient // Numerical Heat Transfer Part A. 2007. Vol. 51, No. 3, 4. P. 393-414.
2. Lamsaadi M., Naïmi M., Hasnaoui M., Mamou M., Bahlaoui A., Raji A. Parallel flow convection in a shallow horizontal cavity filled with non-Newtonian

power-law fluids and subjected to horizontal and vertical uniform heat fluxes // under press, Numerical Heat Transfer. Part A. 2007. Vol. 53.
3. Bahlaoui A., Raji A., Hasnaoui M., Lamsaadi M., Naïmi M. Mixed convection in a horizontal channel with emissive walls and partially heated from below // Numerical Heat Transfer. Part A. 2007. Vol. 51. P. 855-875.
4. Bahlaoui A., Raji A., Hasnaoui M., Lamsaadi M., Naïmi M. Coupled natural convection and radiation in a horizontal rectangular enclosure discretely heated from below // Numerical Heat Transfer. Part A. 2007. Vol. 52. P. 1027-1042.
5. Ben Richou A., Ambari A., Lebey M., Khalid Naciri J.K. Drag force on a circular cylinder midway between two parallel plates at *Re* << 1, Part 2: moving uniformly (numerical and experimental) // Chemical Engineering Science. 2004. Vol. 59, No.15, Part 2. P. 3215-3222.
6. Ben Richou A., Ambari A., Lebey M., Khalid Naciri J.K. Drag force on a circular cylinder midway between two parallel plates at Re << 1 Part 2: moving uniformly (numerical and experimental) // Chemical Engineering Science. 2005. Vol. 60, No. 10. P. 2535-2543.