

April 21, 2009

Report on International Workshop

“Multi-Objective Design Exploration for Aerospace Engineering”

March 19th, 2009

COE Building, Institute of Fluid Science, Tohoku University

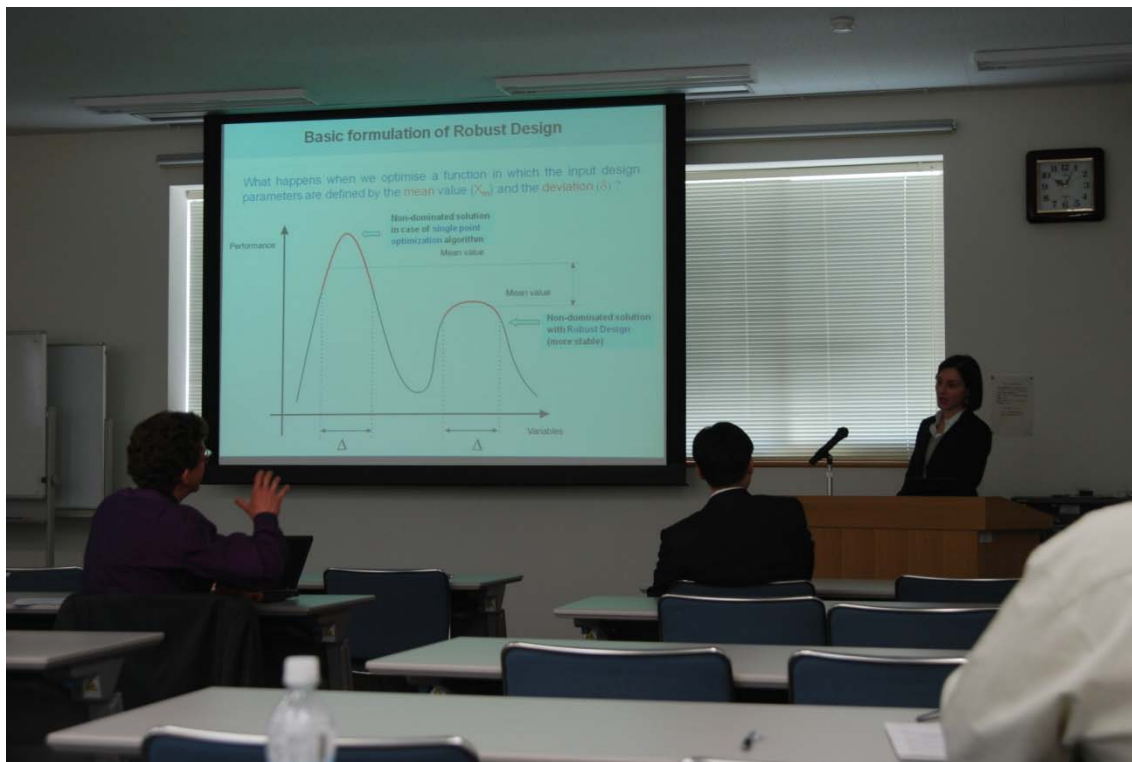
The international workshop “*Multi-Objective Design Exploration for Aerospace Engineering (MODE09)*” was held on March 19 at COE Building, Institute of Fluid Science, Tohoku University. The workshop was supported by Global COE program, *World Center of Education and Research for Trans-disciplinary Flow Dynamics*. This was held as one of activities of International Joint Laboratory “*Development of Design Exploration Method for Real-World Design Problem by International Collaborations*”. The MODE09 focused on cutting-edge Multi-Objective Design Exploration techniques, which have been widely conducted in aerospace field due to the recent advances in CFD techniques and computer resources. The Design Exploration is composed of searching optimal solutions by optimization algorithms and extracting useful information from the solutions by data mining technique. Leading researchers engaged in the activities, mainly who belong to a member organization of the joint laboratory, were invited to the workshop. The invited speakers presented their research activities in design exploration, and a meaningful discussion took place among 42 Japanese and foreign participants from industry and academy.

The workshop was begun with opening speech by Prof. Shigeru Obayashi, project leader of the joint laboratory. At the morning session, Dr. Lucia Parussini at University of Trieste (Italy), Dr. Michael Kokkolaras at University of Michigan (USA), and Prof. Akira Oyama at Institute of Space and Astronautical Science, JAXA gave presentations about robust design, system design and data mining of optimization result.

After the lunch, Dr. David R. Hardoon at University College London (UK) and Prof. Rie Honda at Kochi University presented their research in data mining application based on machine learning techniques. At the third session after a short break, Dr. Ivan Voutchkov at University of Southampton (UK) presented kriging-based optimization approach and Dr. Gerald Carrier at ONERA (France) showed aerodynamic design activities in ONERA. The last presenter is Prof.

Shinkyu Jeong at Institute of Fluid Science, Tohoku University. An enthusiastic discussion over the design exploration techniques was closed with his presentation about various data mining techniques applied to design optimization results. The reception was organized after the workshop to have more discussions among workshop participants.

The MODE09 workshop provided the opportunity to learn cutting edge design exploration techniques conducted all over the world and this would contribute to the future development in this field. Moreover, this workshop was extremely useful to conduct the collaborative research under the joint laboratory project.



Picture 1: Presentation by Dr. Lucia Parussini



Picture 2: Picture taken at reception