



March 23rd and 30th 2015

**Presenting Research Papers in English
at a Colloquium:
a Simulation**

Presenting your work at an international colloquium is important for both your professional advancement and your socio-professional relationships. It requires hours of preparation plus training in a realistic context. For many years now, the CLA in collaboration with the UFC-FC has offered this training course. Once again, a simulation of a colloquium is being organised to provide a realistic experience for University researchers – complete with an audience of their peers: YOU. We need you to make this happen. Please join us!

Présenter une communication scientifique en public, lors d'un colloque, dans un contexte et une situation aussi proches que possible de la réalité professionnelle est un exercice complexe qu'il faut préparer et pour lequel il est nécessaire de s'entraîner. L'équipe des enseignants-formateurs d'anglais du CLA a décidé d'offrir aux stagiaires inscrits à la formation de l'Université **“Préparation à la présentation d'une communication scientifique et Simulation d'un colloque”** la possibilité de s'exercer en présence d'un public, les 23 et 30 mars, au CLA, dans le bel Espace Bernard Quemada. Joignez-vous à ce public !

March 23rd • Programme

Each presentation will be followed by questions and discussion

- 5:25-5:35 pm *Check in*
- 5:40 pm *Welcome and Opening Remarks*

- 5:45-6:10 pm **Quan DO HUU, PhD student UFC, FEMTO-ST, DISC team - Belfort**
Semi-decentralized Distributed Control

Diffusive realization is a mathematical theory which allows some time functions to be significantly simplified in many physical situations. We illustrate this method on a Lyapunov equation arising from optimal control theory of the heat equation.

A method of parameters optimization is provided. It is based on a theoretical error estimate of the solution. These parameters ensure that the error will be very small. This method is also implemented on different parallel computer topologies which are the best choice for real-time, massive and low-cost computation.

- 6:10-6:35 pm **Cyrielle MONTRICHARD, PhD student UFC - ELLIAD**
Soldiers and the Trench Press during the First World War

It has been shown throughout the years that the French national press was the primary tool used to spread propaganda and disinformation between 1914 and 1918 -- as it is clearly said in the work of numerous historians such as D'Almeida and Delporte. Personal letters from soldiers, who generally had access to the civil press, reflect how this propaganda and disinformation affected them. Furthermore, tired and angry from reading false information about their living conditions on the Front line, some of them decided to start their own press which is now called the Trench press. We currently have knowledge of and access to about 200 papers from this period, but some researchers such as Stephane Audoin-Rouzeau estimate that there were about 400 papers published on the Front line during the First World War. This press was written by soldiers for soldiers, and we cannot help but wonder why they needed to read or create their own press and, moreover, to convey what information.

- 6:35-7:00 pm **Lemia LOUAIL, PhD student UFC, FEMTO-ST / DISC**
Wireless Sensor Networks

Recent advances in computer science and more specifically in wireless communication have allowed the development of small, low-cost, low power devices called sensors. Various domains like healthcare, home networking and military make use of these sensors to facilitate their work. The laboratory I work in dedicates both human and material resources to developing new protocols to ensure that such technology works properly. Our goal is to define protocols that allow rapid data transmission while minimizing the energy use of sensors. This can be done by finding the shortest path to the base station, putting sensors that are not in this path in sleep mode, and deleting duplicated data, for example.

- 7:00-7:20 pm *Break and Refreshments*

- 7:20-7:45 pm **Emna DELLALI, PhD student UFC, FEMTO-ST, Energie Belfort**
Thermofluidic Characterization of an Oscillating Reversing Gas Flow within a Micro-regenerator

My PhD thesis comes within the framework of an ANR project that aims at demonstrating the possibility of waste heat recovery using Micro-Stirling Clusters (MiStiC). I am currently working on the thermofluidic characterization of an oscillatory reversing gas flow within a micro-regenerator. Actually, a thermal micro-regenerator is a porous medium (solid matrix), placed between hot and cold sources, through which the fluid goes back and forth alternatively releasing and absorbing heat stored within the matrix material. The study attempts to determine the impact of design and control parameters respectively on micro-regenerator performances under predetermined thermal and fluidic conditions.

- 7:45-8:10 pm **Aurore DUPIN, PhD student UFC, Chrono-environment laboratory/MSME**
Wood Production in the Chailluz Forest

The Chailluz forest (25) was exploited intensively from the 15th to the 20th century. An aerial survey of the land and historical archives prove that Chailluz was used for lumber production in Besançon and charcoal production for both industry and firewood. The aim of our study is to characterize this extensive use of wood in anthracology with dating methods like radiocarbon.

- 8:10-8:30 pm *Closing Remarks*

March 30th • Programme

Each presentation will be followed by questions and discussion

- 5:25-5:35 pm **Check in**
- 5:40 pm **Welcome and Opening Remarks**

- 5:45-6:10 pm **Cyrine FITOURI, PhD student UFC, FEMTO-ST Laboratory, AS2M Department**
Production and Predictive Maintenance Scheduling: the Case of Job-shop

The equipment maintenance function includes the definition of maintenance policies, the decision to intervene, and the scheduling of maintenance. It aims to reduce the frequency of breakdowns and maximize the operational availability of equipment (minimize the duration of periods of inactivity as a result of voluntary or accidental service interruptions). Our study focuses on the aspects of decision-making. We must know how to determine the appropriate maintenance policy to ensure the operating safety of production tasks allocated on the equipment while optimizing its use. Recently, new failure prediction techniques have emerged. They provide information on the real-time condition of equipment and its remaining useful life. Thus, we can consider new methods of decision-making (allocation of predictive maintenance tasks, production scheduling, etc.) based on the analysis of these recent developments.

- 6:10-6:35 pm **Vincent TRENCHANT, PhD student UFC, FEMTO-ST, AS2M (Automatic Control and Micro-Mechatronic Systems Department)**

Vibro-acoustic Issues in Airplanes: a Boundary Control Approach

Automatics is the science of controlling systems. Applied to physical systems, automatics makes it possible to regulate their behaviour thanks to the use of sensors, actuators and mathematical objects called controllers. Vibration reduction in airplanes concerns safety, passenger comfort and noise pollution around airports. Some studies have already been performed to passively reduce acoustic waves in airplanes. Actively attenuating an acoustic wave in a fluid can only be done with a particular configuration of actuators which requires the use of a specific branch of automatics called boundary control.

- 6:35-7:00 pm **Romain VIALA, PhD student UFC, FEMTO-ST, Department of Applied Mechanics**
Model-based Decision Support for the Design and Construction of Stringed Instruments

Instrument making is based on centuries of practice and evolution. However, most of the concepts are empirical and we have only begun to study them recently. The aim of this PhD subject is to determine the role of computer-aided engineering and numerical prototyping in the vibroacoustical study of musical instruments. The final aim is to create a tool for instrument makers, using the finite element method, to modify the geometry and material properties of modeled stringed instruments. In order to conduct this research, a material sensitivity analysis will be performed to determine which parameters are the most important. Then, a study will focus on these parameters. Thirdly, investigations and evaluations will be carried out using numerical models to compare their behavior to that of real instruments.

- 7:00-7:20 pm **Break and Refreshments**

- 7:20-7:45 pm **Xavier GUILLOT, PhD student UFC, EA4267 / Besançon University Hospital - Rheumatology Department**
Cryotherapy in Rheumatology

The aim of my work is to evaluate the therapeutic and biological effects of cryotherapy (cold application) in inflammatory rheumatic diseases. We will apply either ice packs or cold gas sprays on swollen joints in patients (twice a day for one day) as well as in arthritic rats (twice a day for 14 days) and evaluate the effects on pain, joint swelling and biological inflammatory markers (in human joint fluid and rat paw tissues)

- 7:45-8:10 pm **Duy Duc NGUYEN, PhD student UFC, FEMTO-ST, Time and Frequency Department ENSMM**
Introduction to Micro-Mirror Array

In order to obtain the most important information, astronomical scientists always want to capture light from the focused object and avoid that coming from other spoiling sources. Therefore, the need for an astronomical device such as a field selector placed at the focal plane of the telescope has brought about an interesting new direction of research. In 2004, a new astronomical device called Micro-Mirror Array (MMA) was created and studied. This device is composed of thousands of individual Micro-Mirrors (MM) which are also called cells. Each cell is addressable and can be tilted. Instead of sending all the light from space to the spectrograph, the MMA can select which light should be sent and which should not. More specifically, when a cell is tilted, the light of the object reaching this cell is sent to the spectrograph for the spectrum to be recorded. However, when the cell is at rest, the light is sent back into space.

- 8:10-8:30 pm **Closing Remarks**

*For further information
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