uc3m | Universidad Carlos III de Madrid

Seminario El Almendro 2020

Coordinador: Prof. Javier Rodríguez, Departamento Ingeniería Térmica y de Fluidos UC3M
Sesión: 18 de diciembre de 2020 | 11:00-16:30 h. (hora peninsular española)
Créditos: 1 crédito de formación transversal
Seminario online gratuito.

Descripción

El seminario anual El Almendro se compone de diferentes charlas impartidas por investigadores españoles que desarrollan su labor investigadora en el extranjero o en instituciones de interés dentro de España. En ellas nos hablan sobre sus investigaciones y experiencias, a la vez que debaten con los participantes sobre diferentes temas relacionados con la carrera profesional. Las charlas están principalmente dirigidas a un público procedente de diferentes disciplinas en el **área de ingeniería y ciencias**.

El seminario 2020 se emitirá por streaming y podrá seguirse:

- En directo, a través del siguiente enlace de Blackboard Collaborate: https://eu.bbcollab.com/guest/c3ebfcfcb6d745099d3981a5e5dd09ae

- En diferido, a través de las grabaciones que se proporcionarán una vez finalizado el seminario.

Créditos

Los estudiantes de doctorado pueden obtener un crédito de formación transversal por esta actividad. Para ello, deben realizar un resumen crítico de al menos una de las conferencias (extensión máxima: una página por conferencia), en inglés o en español, y entregarlo por e-mail al coordinador (javierrodriguezfluidmechanics@gmail.com) en el plazo de un mes desde la celebración del seminario, es decir, hasta el **18 de enero de 2021.** Obtendrán el crédito aquellos alumnos cuyo trabajo sea calificado apto.

Programa 2020 disponible en la página siguiente. Para ver vídeos de ediciones anteriores, pueden consultar los siguientes enlaces:

El Almendro 2019	Parte I | Parte II | Parte III
El Almendro 2018	Parte I | Parte II
El Almendro 2017	Parte I | Parte II
El Almendro 2016	Parte I | Parte II
El Almendro 2015	Parte I | Parte II

Consultas: gestiondoctorado@uc3m.es

Programa Seminario El Almendro 2020

11:00 am: Welcome words from the organizers

11:15 am: Carlos Wert. *Max Planck Center for Brain Research*

Reinforcement Learning in the Brain: Valence-Based Spatial Navigation in the Hippocampus

A computational model based on the opponency between serotonin and dopamine explains behavioural traits of hippocampal navigation. This topic serves as an example of how computational neuroscience intersects with machine learning.

11:50 am: Carlos San Miguel. *OpenBank*

From turbulence to finance. How I ended up using my PhD in fluid mechanics to solve financial risk problems

When I was finishing my PhD thesis on turbulent boundary layers, I never thought I would end up working in banking, but in the end all those skills I learned during my PhD thesis help me in my daily work. In this talk, I will explain how those experiences that one lives during the time of a PhD can be used in the industry and how a PhD can open more doors than expected.

12:30 pm: Break

13:00: Valeria Garbin. *University of Delft*

Bubbly! From cracking joints, to volcanoes, to the lab

Bubbles are hidden inside a variety of man-made or natural materials and fluids. Lots of tiny bubbles give texture to chocolate mousse. A few tiny bubbles created when we crack our joints are the cause for the “crack” noise we hear. Huge bubbles are formed inside volcanoes because of the decompression of magma as it rises to the surface of the Earth. From sub-millimeter to kilometer scales, from industrial to biological processes, researchers strive to understand and control the presence and evolution of bubbles. In this talk I will share with you my interest in understanding and controlling the behavior of bubbles inside different materials, and describe some experiments from my lab.

14:00: Debate: Prospects for professional future: Academia vs. Industry with Arjan van der Bos, *Canon Production Printing Netherlands B.V.*

15:00: Break

15:30: Roberto Zenit. *Brown University*

Some fluid mechanical aspects of artistic painting

Painting is a fluid mechanical process. The action of covering a solid surface with a layer of a viscous fluid is one of the most common human activities; virtually all manmade surfaces are painted to provide protection against the environment or simply for decoration. This process, in an industrial context, has been vastly studied and it is well understood. In the case of artistic painting the purpose is different. Painters learn how to manipulate the nonuniform deposition of paint onto a surface, through lengthy empirical testing of the action and modifying the physical properties of the fluids, to create textures and patterns of aesthetic value. In this paper, an analysis of some notable painting techniques is presented from the point of view of fluid mechanics. In particular, we discuss the so-called “accidental painting” technique, originally devised by David A. Siqueiros, which is the result of a Rayleigh-Taylor instability. An analysis of several techniques used by Jackson Pollock is also presented, showing how he learned to carefully control the motion of viscous filaments to create his famous abstract compositions. We also briefly discuss how pattern and textures are produced in decalcomania and watercolor painting. These investigations indicate that it is possible to establish concrete scientific discussions among modern fluid mechanics, art, art history, and conservation.

After the talk, Roberto will answer questions from students on their professional development.

16:30: Conclusions