UCF/USF special workshop on:

# Complex Analytic Methods with Applications in Orthogonal Polynomials, Integrable Systems, and Random Matrix Theory

**February 25 & 26, 2023**

**Welcome and Coffee–Saturday, February 25 at 12:00 PM**

Hosted By:
University of Central Florida
Department of Mathematics

Contact:
University of Central Florida
4393 Andromeda Loop N, Orlando, FL 32816
(407) 823-6284

Organizers:
Nathan Hayford (University of South Florida)
Jeffrey Oregero (University of Central Florida)
[Email: jeffrey.oregero@ucf.edu]
Fudong Wang (University of Central Florida)

## Abstract

Orthogonal polynomials, integrable systems, and random matrix theory are classical subjects at the interface of analysis and mathematical physics. Remarkably, over the last three decades by using complex analytic methods fundamental relationships between these seemingly disparate topics have been discovered. The goal of this workshop is to: (i) bring together researchers from University of Central Florida and University of South Florida working in orthogonal polynomials, integrable systems, and random matrices; (ii) showcase some of the important developments and applications; (iii) foster collaboration between the two universities; and (iv) expose graduate students in analysis to the field and some of its leading experts.

**Location:** All seminars will be held in **MSB 406**.

**Schedule:**

**Saturday, February 25**

| | | |
|---|---|---|
| 12:00 PM | Welcome coffee | |
| 12:30 PM | Xin Li | Opening remark by Math Department Chair at UCF |
| 12:40 PM | Alexander Tovbis (UCF) | Recent developments in spectral theory of soliton gases for integrable equations. |
| 1:30 PM | Robert Jenkins (UCF) | TBA |
| 2:20 PM | Wen-Xiu Ma (USF) | Nonlocal integrable equations and their related Riemann-Hilbert problems. |
| 3:10 PM | Break | |
| 3:40 PM | Razvan Teodorescu (USF) | SLE, Or Sturm-Liouville Entropy |
| 4:30 PM | Seung-Yeop Lee (USF) | Criticalities in Random Normal Matrices. |

**Sunday, February 26**

| | | |
|---|---|---|
| 8:30 AM | Coffee/Breakfasts | |
| 9:00 AM | Evguenii Rakhmanov (USF) | Hermite-Pade approximation, equilibrium problems and Riemann surfaces. |
| 9:50 AM | Abey Lopez-Garcia (UCF) | Non-standard Green energy problems in the complex plane. |
| 10:40 AM | Dmitry Khavinson (USF) | *" It is useful to solve extremal problems "* -Almost I. Newton |
| 11:30 AM | Lunch | |
| 1:00 PM | Erik Lundberg (FAU) | Arclength null quadrature domains. |
| 1:50 PM | Nathan Hayford (USF) | The Ising model coupled to 2D gravity. |