

APS Scientific Computation Seminar Series

Speaker: Pablo Enfedaque
Computational Research Division
Lawrence Berkeley National Laboratory

Title: High Performance X-Ray Ptychography @CAMERA

Date: Monday, June 7, 2021

Time: 1:00 p.m. (Central Time)

Location: <https://bluejeans.com/5625919115?src=calendarLink>

Hosts: Mathew Cherukara and Nicholas Schwarz

Abstract:

Over the past decade, X-ray ptychography has become a staple in many scientific applications for its robustness and flexibility when imaging materials at the nanometer resolution. However, ptychography capabilities also entail a variety of challenges: the optimization of joint problems for phase and illumination retrieval, high computational and memory requirements, complex experimental settings, etc. At the Center for Advanced Mathematics for Energy Research Applications (CAMERA) scientists have been working on developing algorithms and software for X-ray ptychography over the past 7 years. Ptychography pipelines have been continuously evolving over this time in order to match the data rates of new(er) generation synchrotron light sources, further improving reconstruction quality, or streamlining data acquisition and analysis. This talk will elaborate on these challenges, and highlight some of the work and solutions being developed inside the CAMERA team for X-ray ptychography instruments at synchrotron light sources.

Bio:

Pablo Enfedaque is a Computer Engineer at the Lawrence Berkeley National Laboratory, working for the CAMERA team under the Computational Research division. He received his BE, MSc and PhD degrees in computer science, high performance computing and information theory, in 2012, 2013, and 2017, respectively, from the Autonomous University of Barcelona, Spain. His research interests include X-Ray imaging, high performance computing and parallel architectures.