institute for pure & applied mathematics

Computational Microscopy

September 12 - December 16, 2022

Scientific Overview

he goal o thi long program propo al i to ring together enior and unior applied mathematician ph ici t chemi t material cienti t engineer and iologi t to di cu and de ate on the current tatu and uture per pective o modern micro cop u ing computation mathematic and modeling. r o ha revolutioni ed iolog and li e cience including ver recentl olving the atomic tructure o O which ha een greatl acilitating the development o the vaccine and a erration corrected electron optic and high rightne ra ource have tran ormed ph ical cience imaging. he ne t tep in the e ield will advance order o magnitude the temporal re olution and energ re olution while maintaining atomic patial re olution in a variet o ample environment rom near ero elvin in vacuum to temperature o a thou and degree in a highl corro ive atmo phere. he e advance will tran orm re earch in macromolecule material energ technologie uantum device and other ield . owever the all re ult in multidimen ional multimodal ig and e tremel noi data. here ore ophi ticated mathematical and computational method to derive the ma imum po i le u e ul cienti ic in ormation rom the minimum po i le uanta o radiation are urgentl needed. he our wor hop will ring together leading applied mathematician ph ici t data cienti t and computational cienti t to di cu trategie to tac le the e ma or cienti ic challenge through a com ination o advanced algorithm mathematical modeling computational tool ig data proce ing and deep learning.

Long Program Schedule

- Computational Microscopy Opening Day : September 12, 2022
- Computational Microscopy Tutorials : September 13-16, 2022
- Workshop I: Diffractive Imaging with Phase Retrieval : October 10-14, 2022
- Workshop II: Mathematical Advances for Multi-Dimensional Microscopy : October 24-28, 2022
- Workshop III: Cryo-Electron Microscopy and Beyond : November 14-18, 2022
- Workshop IV: Multi-Modal Imaging with Deep Learning and Modeling : November 28 - December 2, 2022
- Computational Microscopy Culminating Retreat at Lake Arrowhead : December 11-16, 2022

Organizers

Insert list of organizers here. First and Last Name (Institution).

Participation

This long program will involve senior and junior researchers from several communities relevant to this program. You may apply for financial support to participate in the entire fourteen-week program, or a portion of it. We prefer participants who stay for the entire program. Applications will be accepted through May 16, 2022 but offers may be made up to one year before the start date. We urge you to apply early. Mathematicians and scientists at all levels who are interested in this area of research are encouraged to apply for funding. Supporting the careers of women and minority researchers is an important component of IPAM's mission and we welcome their applications. More information and an application is available online.

NSF UCLA

For more information, visit the program webpage:

www.ipam.ucla.edu/CMS2022