



# APS/IIT Summer XAFS School

*Now accepting applications*

**July 24-29, 2022**

**Illinois Institute of Technology  
Department of Physics  
Robert A. Pritzker Science Center  
31st and State St.  
Chicago, IL 60616**



This XAFS summer school is an extended version of the summer school offered previously at IIT in Chicago in collaboration with the Advanced Photon Source. It will again be at IIT in Chicago, in-person (COVID-permitting; bring a mask), and it will run Sunday-Friday, with experiment day at the APS on Tuesday. Course material will cover fundamental and practical aspects of X-ray Absorption Fine Structure Spectroscopy: basics, sample preparation, experiment, theory, data analysis.

One day of hands-on experiments will be carried out by participants at a handful of APS beamlines, followed by a guided data analysis laboratory using Larch/Athena/iFEFFIT family of programs. Several computers will be available for those participants attending without their own laptops, but it's best to bring your own. The target audience is graduate students, postdocs, and experienced scientists who are new to XAFS and want to use it in their own research. Space is available for up to 40 students.

Instructors include: Matt Newville (UChicago), Shelly Kelly (Honeywell), Bhoopesh Mishra (IIT), Carlo Segre (IIT), Grant Bunker (IIT), Jeff Terry (IIT), and other experienced XAFS researchers.

The cost of the course is \$650 USD, which covers most but not all meals via an IIT meal card. Participants will be responsible for their own housing (available on and off IIT campus) and travel to/from their home institutions. IIT is readily accessible by car, cab, and CTA train from O'Hare and Midway airports. Free time will be available most evenings including dinner time for participants to visit Chicago attractions such as Grant Park, the Loop, Millennium Park, Lake Michigan; music, architecture, art, theater; Chinatown, White Sox, Field Museum, Shedd Aquarium, Adler Planetarium, and Navy Pier, and numerous restaurants and pubs.

For more information, and to apply, please email [bunker@iit.edu](mailto:bunker@iit.edu) with subject line “2022 XAFS School”.

## Schedule Outline (subject to modification)

S1: Lecture: Introduction and overview of XAFS, history, applications

S2: Lecture: Theory: Basic theory and interpretation of EXAFS and XANES

S3: Lecture: Experimental: synchrotron radiation, beamlines, detectors

S4: Lecture: Experimental: design, choosing measurement modes, sample geometry, sample preparation methods

M1-M4: Lab: prepare and characterize samples

T1-4: Lab: Measurements at Advanced Photon Source, all day

W1: Lecture: Data Analysis: Data reduction methods, Fourier methods

W2: Lecture: Data Analysis: Data models, nonlinear fitting, confidence intervals

W3-W4: Lab: hands-on reduction and analysis of XAFS data

R1: Lecture: Theory: Disordered systems, Linear combinations, PCA

R2-R4: Lab: hands-on reduction and analysis of XAFS data continued

F1: Lecture: Theory: Calculation of Theoretical Spectra, approaches

F2-F3: Lab: Data Analysis continued/Consult on special problems

F4: adjourn

Outline Schedule	Sun* 7/24	Mon 7/25	Tue 7/26	Wed 7/27	Thurs 7/28	Friday 7/29
8:00-9:00 AM	Registration	Breakfast	Breakfast	Breakfast	Breakfast	Breakfast
9:00-10:15 AM	S1	M1	T1->ANL	W1	R1	F1
10:15-10:45 AM	coffee/tea	coffee/tea	–	coffee/tea	coffee/tea	coffee/tea
10:45 AM -12:00	S2	M2	T2	W2	R2	F2
12:00-1:30 PM	S3pt1/ Lunch/	Lunch	–	Lunch	Lunch	Lunch
1:30-2:45 PM	S3pt2	M3	T3	W3	R3	F3
2:45-3:15 PM	coffee/tea	coffee/tea	–	coffee/tea	coffee/tea	coffee/tea
3:15-4:30 PM	S4	M4	T4->IIT	W4	R4	Adjourn
6:00 PM	Dinner	Dinner	Dinner	Dinner	Dinner	–
Evenings	Open	Open	Open	Open	Open	–

\*Lunch served 1:00-2:00pm Sunday, S3 session may be split over lunch break, subject to change