

Upgrades of the X-ray Correlation Spectroscopy Instrument at the Linac Coherent Light Source

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Over the past year, the X-ray Correlation Spectroscopy (XCS) instrument [1] received several major upgrades to develop new pump probe capabilities as well as a new pink beam delivery scheme. A new femtosecond laser system and time tool chamber were installed to enable a wide range of pump probe type of experiments. A wavefront splitting based hard X-ray split and delay was commissioned as well. It can operate in a range of 6.5-13 keV with a delay range from roughly -30 to 830 ps at 8 keV, with varying ranges as a function of energy.

Concerning the beam delivery, a pair of new X-ray mirrors was installed to enable pink beam delivery on the same axis as the monochromatic beam from the large offset monochromator. This new “periscope” mirror system allows us to switch between pink and monochromatic beam in a matter of minutes with minimal beamline realignment.

Those new upgrades contribute to make XCS a robust instrument capable of fully utilizing the Linac Coherent Light Source (LCLS) beam properties.

References

- [1] Alonso-Mori, R., Caronna, C., Chollet, M., Curtis, R., Damiani, D. S., Defever, J., Feng, Y., Flath, D. L., Glownia, J. M., Lee, S., Lemke, H. T., Nelson, S., Bong, E., Sikorski, M., Song, S., Srinivasan, V., Stefanescu, D., Zhu, D. & Robert, A. (2015). *J. Synchrotron Rad.* 22, 508-513.