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Dynamic Structural Science: developing tools for time-resolved structural studies

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The fundamental aim of structural biology is to understand the molecular basis of life. To achieve this, a high resolution description of how the system changes with time is required. Single time-averaged structures, for example those of cryotrapped intermediates, provide snap-shots of a reaction that yield considerable information. However, cryotrapping approaches are limited to the study of longer lived, metastable, states. To observe short-lived species a time-resolved approach is required.
We are developing a new approach to time-resolved crystallography that combines the new developments in microfocus beams and beamline automation with information from single crystal spectroscopy to study non-reversible enzyme reactions. Here we will present initial results using our test system, aspartate decarboxylase.

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