



Contribution ID: 53

Type: Oral

## SDU: Software for high throughput automated data collection at the Swiss Light Source

Wednesday, September 21, 2022 1:30 PM (20 minutes)

Presented by Kate Smith on behalf of the SLS MX Group.

The Swiss Light Source Macromolecular Crystallography Group operates three beamlines (X06SA, X06DA and X10SA) served by an in-house developed distributed DA+ software stack, which supports standard and sophisticated data acquisition and analysis[1,2]. Recent hardware upgrades include the TELL robot with increased dewar capacity and sample exchange speed[3], new TELL gripper design with pin detection, implementation of the fast fragment- and compound-screening pipeline (FFCS)[4,5], new sample environment top camera and backlight, and the installation of SmarGon+ MCS2 with in-house SmargoPolo controls software and calibration routine.

Recent software developments include the extension of DA+ software microservice architecture, implementation of sample spreadsheet validation in TELL GUI and a user web application, deployment of automated loop centering routines, addition of native-sad merging to automatic data processing, and the migration of our samples database to the cloud. In this talk I will present how the advancements in hardware and software were leveraged in implementing the sophisticated communication and decision making software, Smart Digital User (SDU), for fully automated data collection[6].

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3. Martiel I, Buntschu D, Meier N, Gobbo A, Panepucci E, Schneider R, et al. The TELL automatic sample changer for macromolecular crystallography. *J Synchrotron Rad.* 2020 May 1;27(3):860–3.
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5. Sharpe ME, Wojdyla JA. Fragment-Screening and Automation at the Swiss Light Source Macromolecular Crystallography Beamlines. *Nihon Kessho Gakkaishi.* 2021 Aug 31;63(3):232–5.
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**Track Classification:** NOBUGS 2022