Next-Generation Beam Alignment in the STADI P: Automated Optimization with ADAMAnT

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The STOE STADI P ADAMAnT (*A*utomated *D*iffractometer *A*nd *M*onochromator *A*lignme*n*t *T*ool, Figure 1) hard- and software have recently been introduced as the next-generation successor of the well-established Beam Optimization tool within the WinX^{POW} software. Previously, adjusting the goniometer required a manual repositioning of the goniometer axis into the beam path by luminescent screen and open shutter. With the ADAMAnT every alignment-step is fully automated and yet controlled by STOE's WinX^{POW} with no necessity to access the radiation protection hood.

Whether replacing a worn X-ray tube with one of the same anode material or switching to a different target (Co, Cu, Mo, or Ag), the ADAMAnT automatically positions the Johann-type monochromator at the maximum intensity of the $K\alpha_1$-radiation of the sealed tube's line focus, using a certified standard material. Subsequently, software-controlled motors precisely align the collimator and the goniometer axis to their optimal positions within the beam path.

STOE's ADAMAnT is available for all new horizontal STOE STADI P goniometer and can also be retrofitted to existing horizontal STADI P diffractometers. The software tool, including continuous monitoring of all motorized movements and precise positioning of the monochromator, goniometer, and slits, is demonstrated using the example of interchanging two X-ray tubes with different anode materials.



Figure 1. *The STOE STADI P including the new ADAMAnT hardware.*