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Handling the functional features of accelerator components using ISO GPS situation features

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The building blocks of a scientific facility based on particle beams is made of magnets and electro-magnetic devices such as accelerating cavities. The optical design usually imposes a demanding accuracy with respect to their theoretically exact position and orientation. It is however frequent that the functional features are either not clearly defined –what is the « axis » of a magnet –, or not directly used along the lifecycle of these devices. Improving the ways to handle these functional features would contribute to meeting the demanding challenges.

The European Spallation Source (ESS) is aiming at providing a powerful proton linear accelerator and a target system to produce pulsed neutrons. The challenging complex design and integration yielded to introducing a tool shared in common by all stakeholders along the lifecycle: the “situation features”, as defined in ISO GPS (Geometrical Product Specifications) standards. They are here developed and extended to beyond-mechanics cases. Two examples are presented: neutron beam optics; and fiducialisation and installation of quadrupole magnets. Perspectives of generic use are also highlighted.

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Footnotes

I have read and accept the Privacy Policy Statement

Yes

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