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Alignment systems propositions to face the FCC-ee MDI challenges

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The FCC-ee will implement a crab-waist configuration, implying a very dense Machine Detector Interface (MDI), having accelerator components to be placed inside the detector. For the moment, a very elegant but complex design raises challenges, especially regarding the conditions near the components requiring alignment. Alignment sensors will need to be installed and operate in cryogenic temperature, radiations, and magnetic fields etc. while being very compact and accurate enough to fulfil the requirements. This presentation will underline propositions for alignment systems to be used in the MDI, including a new in-line multiplexed and distributed Frequency Scanning Interferometry (IMD-FSI), to monitor the shape of the assembly. Ongoing studies, developments and remaining challenges are also mentioned.

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