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CLIC active pre-alignment system: proposal for CDR and program for TDR

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The active pre-alignment of the Compact LInear Collider (CLIC) is one of the key points of the project: its feasibility will have to be demonstrated in the Conceptual Design Report (CDR), end of 2010. The components must be pre-aligned with respect to a straight line within a few microns over a sliding window of 200 m, along the whole 20 km long linacs. The proposed solution is the outcome of 20 years of Research and Development (R&D). Stretched wires of more than 200 m, overlapping over half of their length, will be the reference of alignment. WPS sensors, coupled to the compoments to be pre-aligned, will perform precise and accurate measurements with respect to these wires.

In this paper, the global strategy of active pre-alignment is detailed, taking into account both the determination of the position and the repositioning. This presentation will be completed by results demonstrating the feasibility of the proposed solution. The validation of such a solution will be confirmed on real size mock-ups, in lab and in accelerator environment. These tests, foreseen during the Technical Design (TDR) phase, will be completed by additional R&D on alternative alignment and repositioning solutions.

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