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## Evaluation and positioning of the PACMAN reference wire to a sub-micron level

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The PACMAN project's aim is to develop and build a pre-alignment bench on which components are assembled and aligned to the required accuracy using a stretched wire. During the process of this measurement, the centre of a stretched wire is aligned with respect to the reference axis of the components. The Cu-Be wire with a diameter of 0.1 mm considered for this task has been evaluated. The first part of the talk will focus on the form error measurements performed on the wire, whereas the second part will discuss the design of a sensor to measure the wire axis position within the volume of the Leitz Infinity coordinate measuring machine. The conclusion drawn from the form evaluation presented in the first part of the talk is that a form measuring sensor should be used to increase the precision of the positioning measurement. The Shape Evaluating Sensor: High Accuracy & Touchless SESHAT is being designed for this task: its challenge is to measure the form error of this stretched wire with 0.1  $\mu\text{m}$  accuracy and its axis position with 0.5  $\mu\text{m}$  precision on the coordinate measuring machine. The singularity of the SESHAT's design is an opening in the radial direction. Indeed, during the talk the requirements will be introduced: no magnetic fields created, high accuracy on the positioning, low error motion, and open on the side; and the technical solutions will be described and discussed: from the material to use to the bearings type, including the kind of sensor, motor and encoder.

### Summary

The PACMAN project's aim is to develop and build a pre-alignment bench on which components are assembled and aligned to the required accuracy using a stretched wire. This talk will focus on the wire quality evaluation and the way planned to be used to localise the wire axis.

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