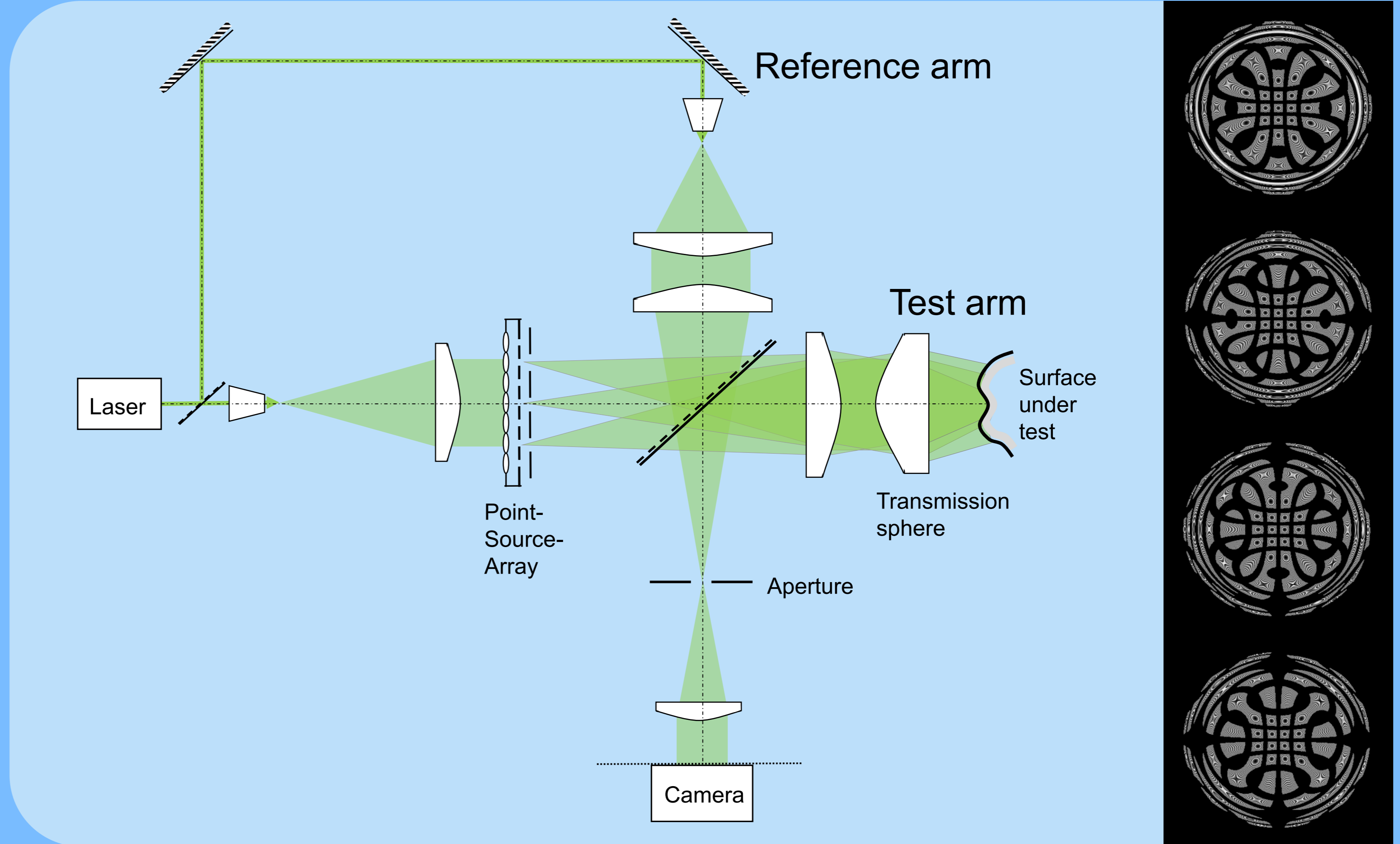
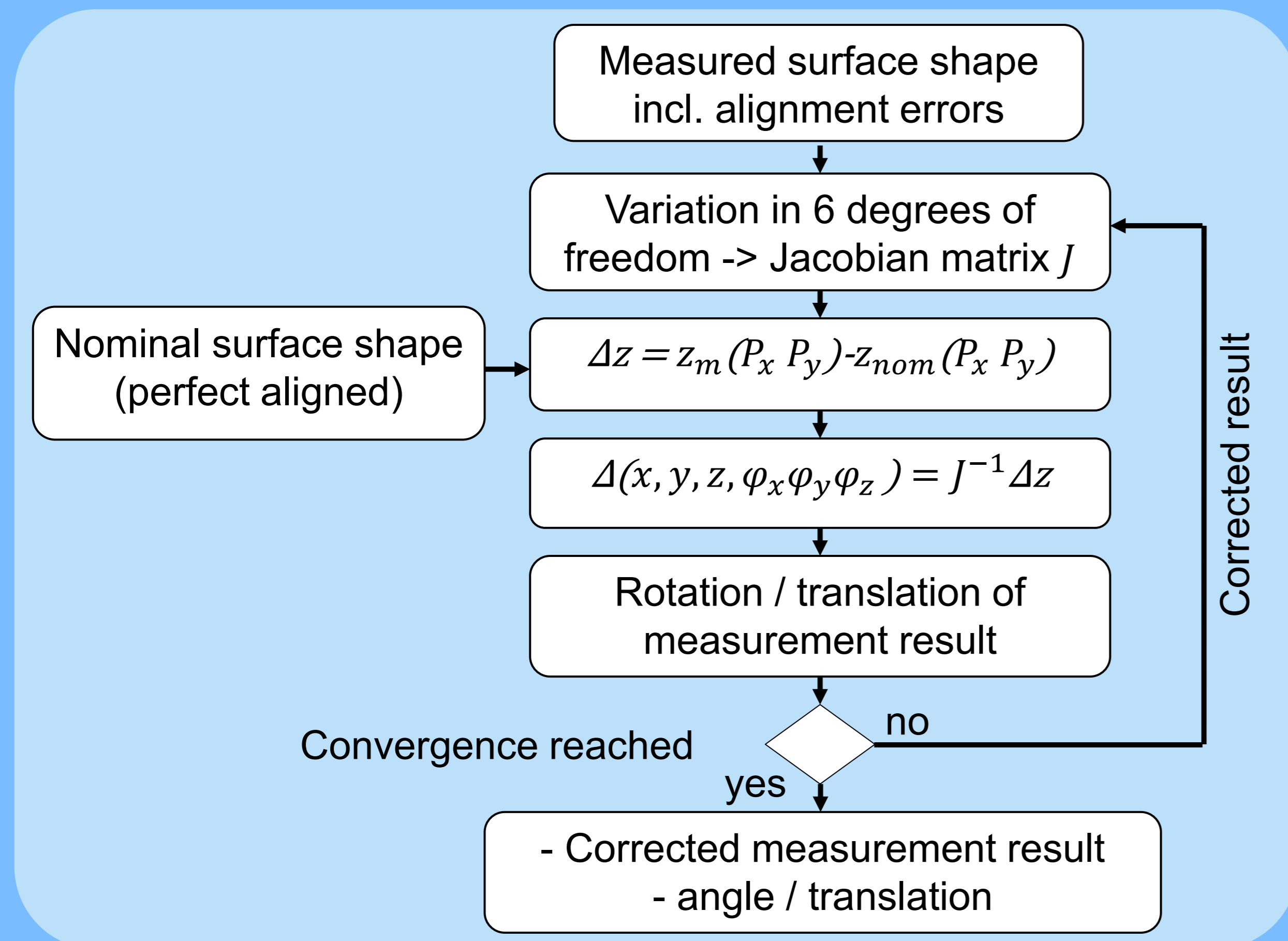


Measurement of aspheric and freeform surfaces with the tilted-wave-interferometer (TWI)

A method for the elimination of alignment errors in a non-null test interferometer for the measurement of aspheres and freeform is presented. Usually the aberrations introduced by misalignment are simply subtracted from the measurement result since the exact retrace errors introduced due to the misalignment are unknown. In the case of the TWI these retrace errors can be calculated using the calibration information which allows a more sophisticated method for the distinction between surface and alignment errors leading to higher measurement accuracy and lower requirements for the alignment accuracy of the surface under test.

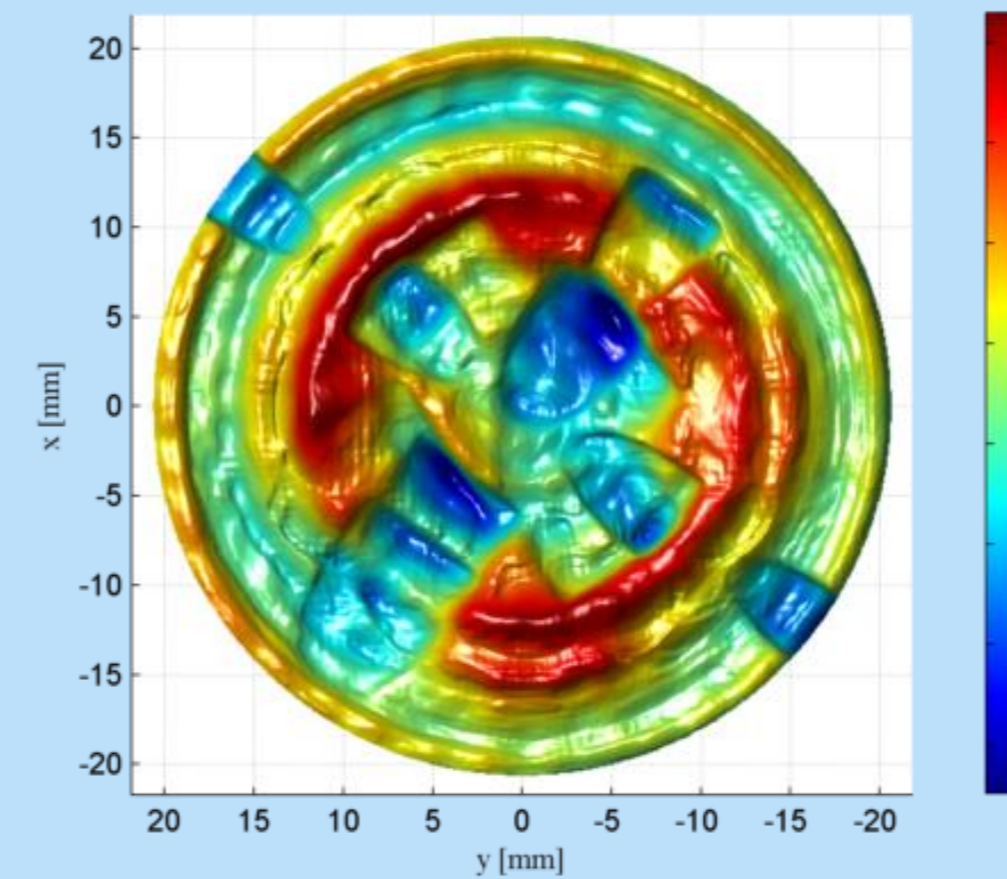
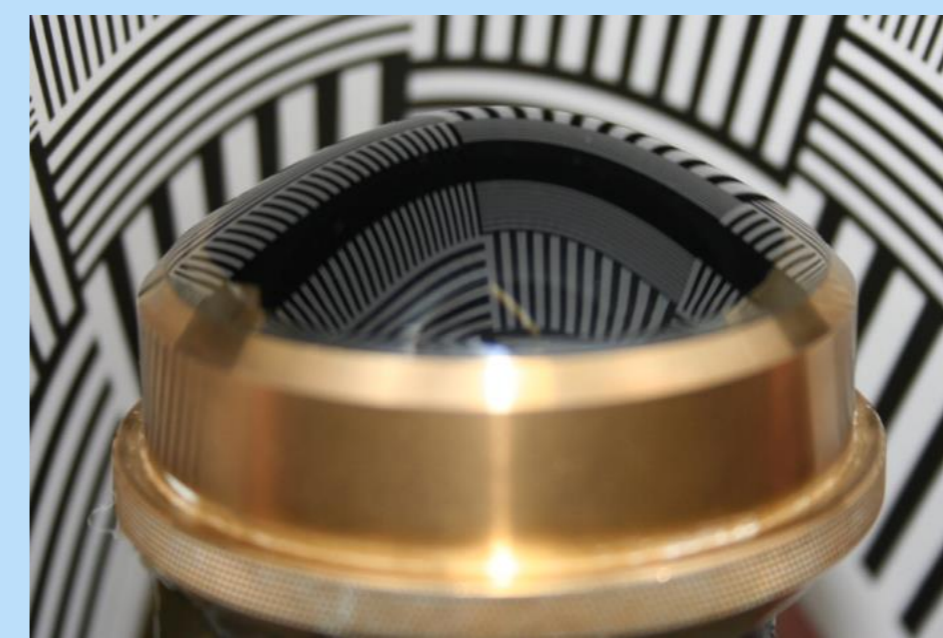


Elimination of alignment errors

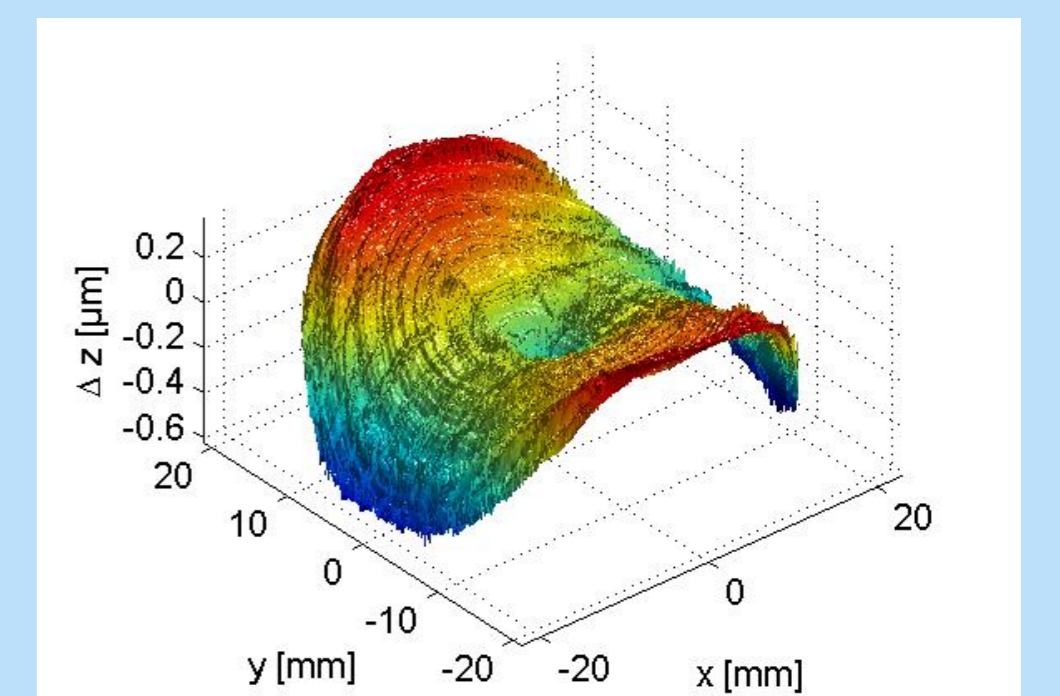


Example measurements

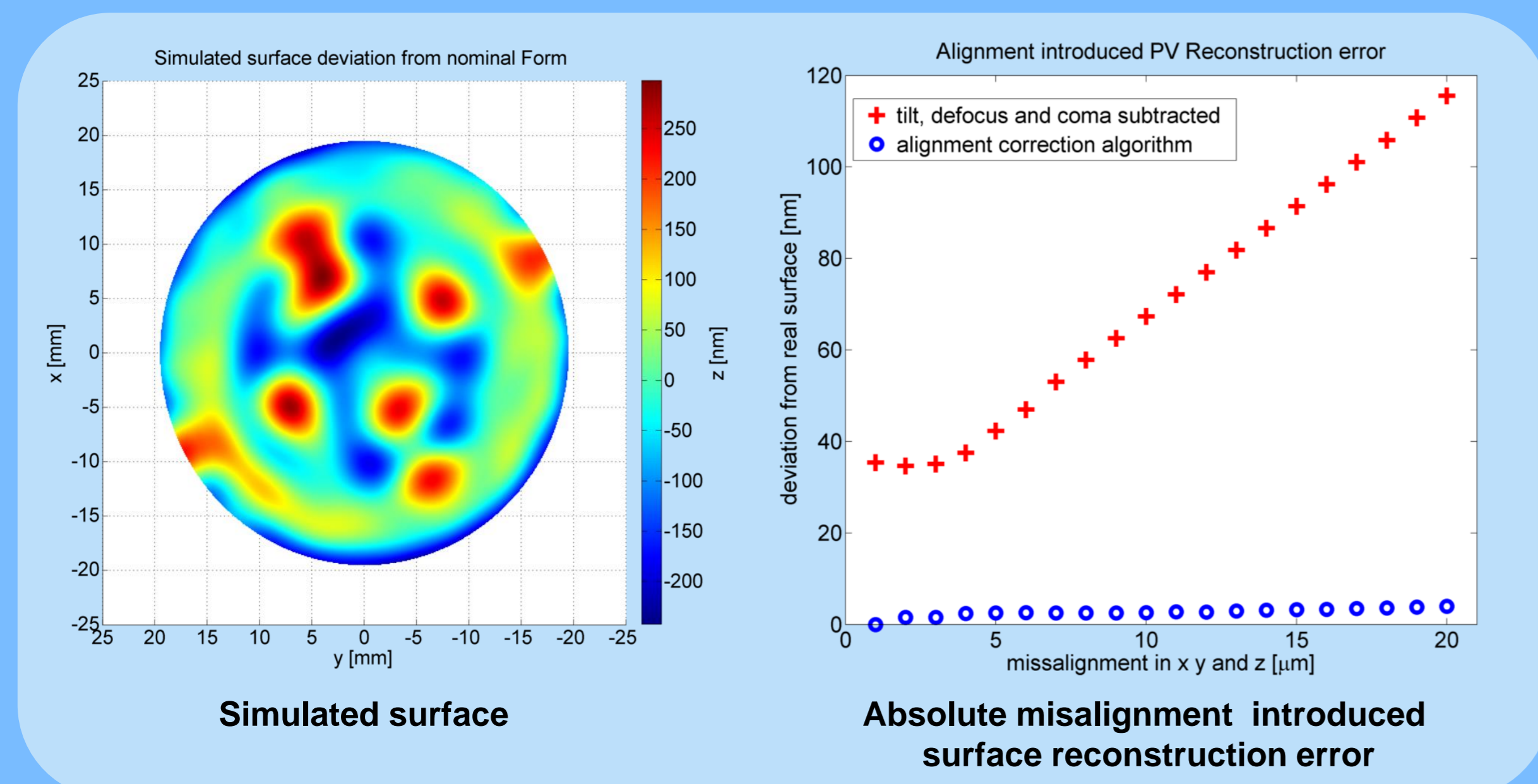
Asphere with MRF footprints



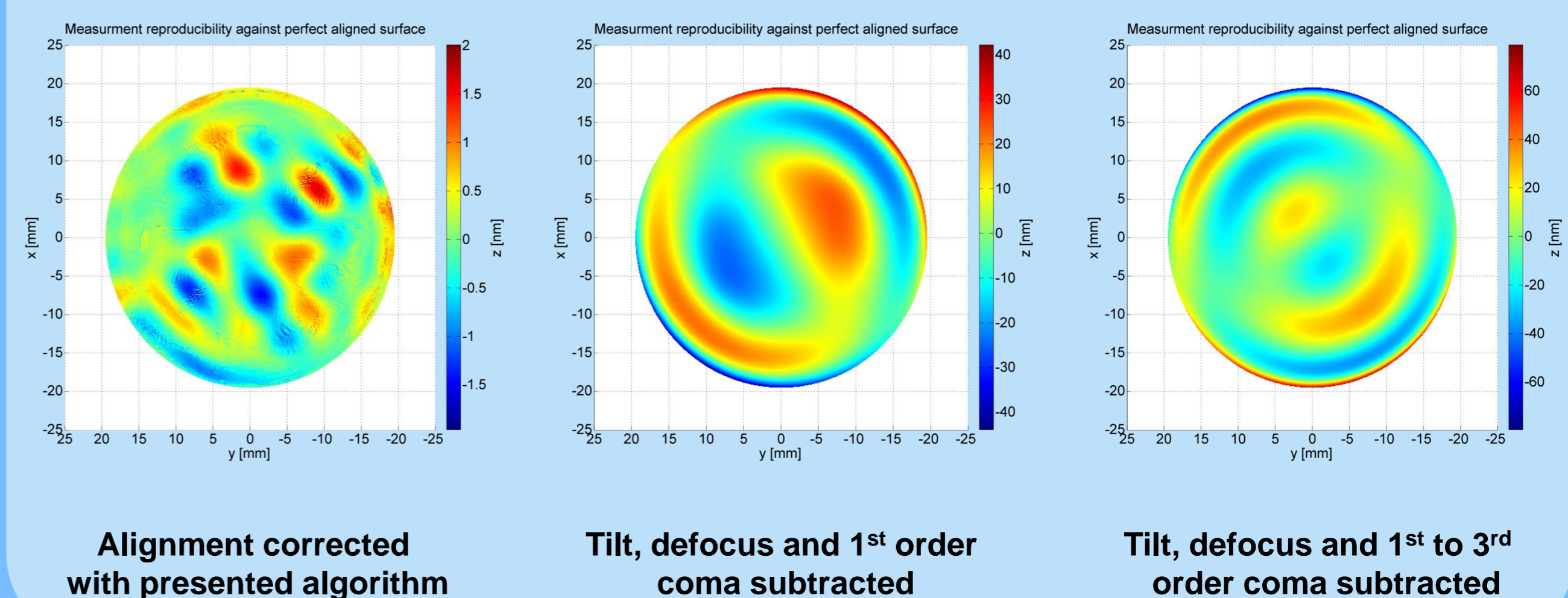
Free-form surface with diamond turning grooves



Results



Example surface reconstruction error, 20 μm misaligned



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