Calibration results after optimization (with uncertainties):

Focal Length: fc = [ 1324.15831 1320.17341 ] ± [ 12.73875 12.94085 ]

Principal point: cc = [ 306.60267 255.45406 ] ± [ 23.47377 16.99569 ]

Skew: alpha\_c = [ 0.00000 ] ± [ 0.00000 ] => angle of pixel axes = 90.00000 ± 0.00000 degrees

Distortion: kc = [ -0.55883 3.83214 0.00207 0.00527 0.00000 ] ± [ 0.11332 1.91635 0.00247 0.00502 0.00000 ]

Pixel error: err = [ 0.43172 0.42871 ]

Note: The numerical errors are approximately three times the standard deviations (for reference).

Pixel error: err = [ 0.43172 0.42871] (all active images)

fl(mm) = 7.9449 7.9210

Extrinsic parameters:

Translation vector: Tc\_ext = [ 19.286440 -109.847782 949.661015 ]

Rotation vector: omc\_ext = [ -2.159183 -2.277442 -0.053495 ]

Rotation matrix: Rc\_ext = [ -0.053545 0.998337 0.021378

0.998239 0.052968 0.026697

0.025520 0.022770 -0.999415 ]

Pixel error: err = [ 0.21219 0.20507 ]