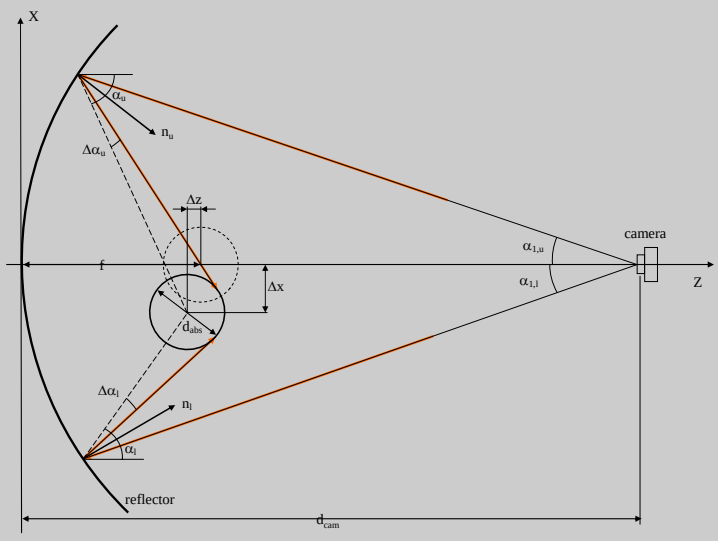

Figure 1

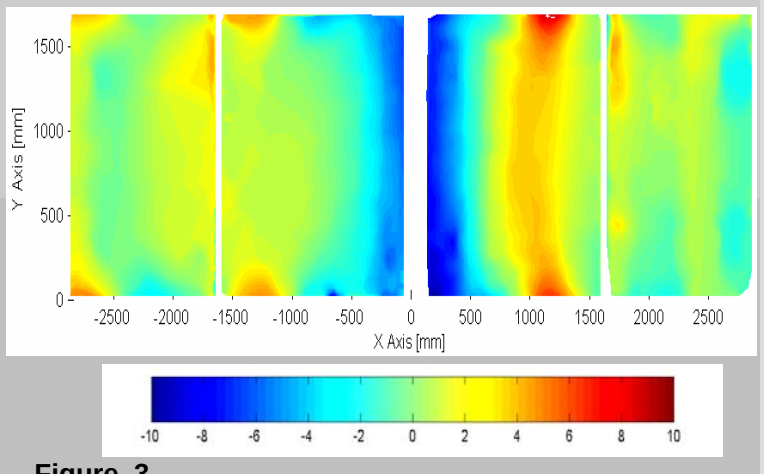

Figure 3

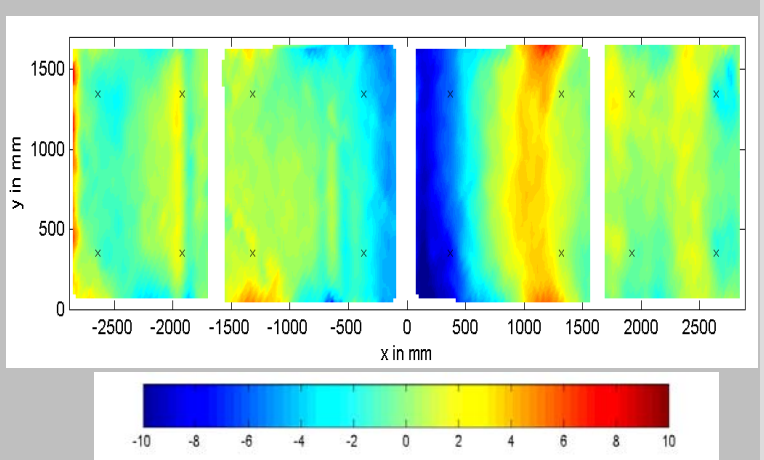

Figure 4

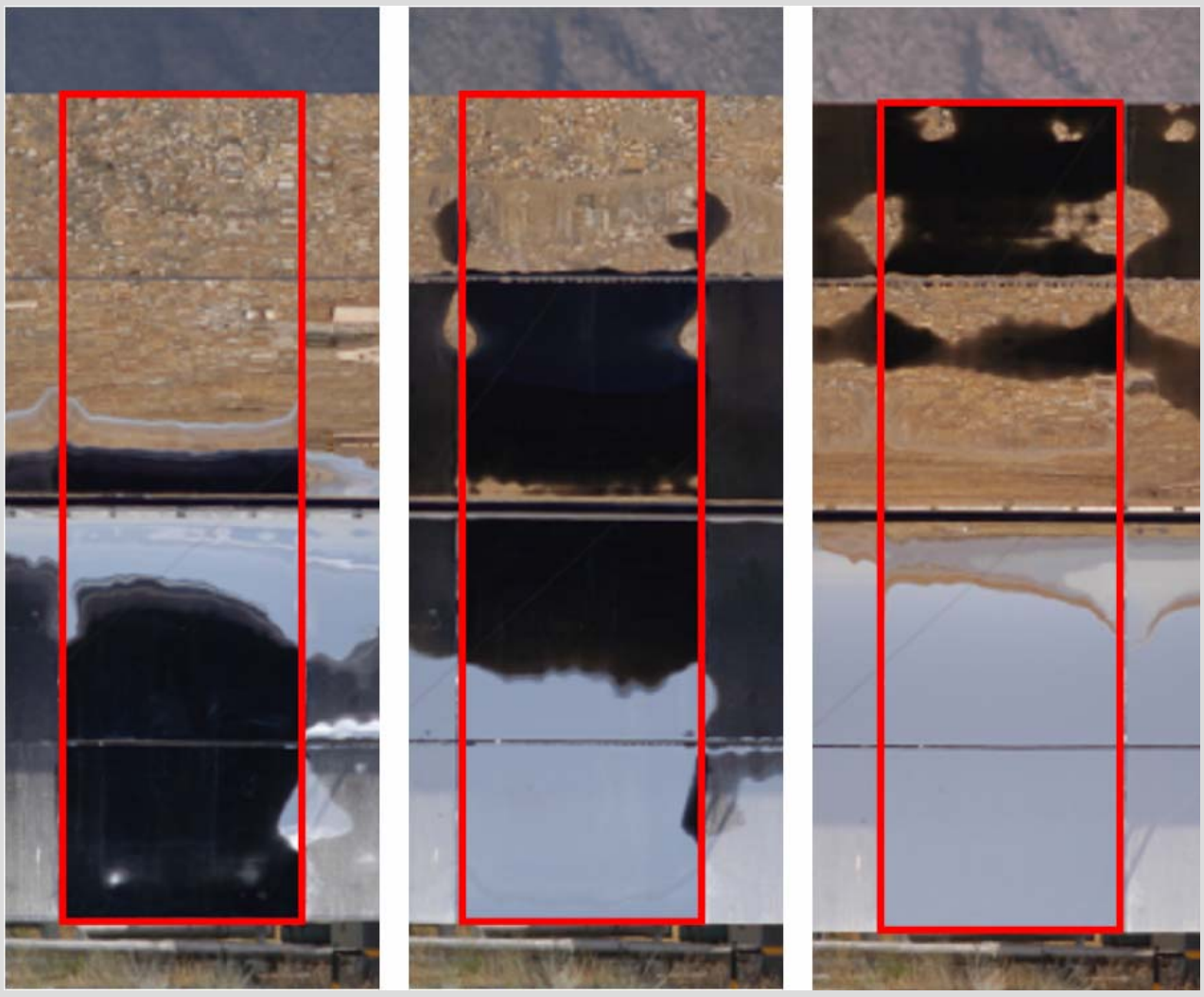

Figure 2

Figure 1: Sketch of the measurement configuration with observed and reflected rays

Figure 2: Example of images with the reflected absorber image

Figure 3: Result of the slope deviations from absorber deflectometry, in mrad

Figure 4: Result of the slope deviations from close-range photogrammetry, in mrad

Institute of Technical Thermodynamics

Measurement of Slope Deviations of Parabolic Trough Collectors by Image Analysis of the Reflected Absorber Tube

Steffen Ulmer, Klaus Pottler, Eckhard Lüpfert

Mirror shape deviations of parabolic trough collectors can be measured with this optical measurement technique with high speed and precision. The slope error is determined from images of the reflected absorber tube. The specific image analysis and evaluation tools are used in a mostly automated evaluation procedure. The results have been compared to the photogrammetry results with high accuracy. The speed of the method makes it applicable to very large reflector areas for quality control.

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