UNIVERSITÄT DUISBURG ESSEN

IVG Institut für Verbrennung und Gasdynamik
Fakultät für Ingenieurwissenschaften

Project / Bachelor- / or Master Thesis

Setup and operation of a test bench for characterization of scientific CCD cameras

At our institute we operate a number of scientific grade CCD-cameras for two-dimensional imaging of optical phenomena in combustion systems, gaseous flows and plasma reactors, often coupled with various laser diagnostics techniques. Most of these cameras are equipped with fast image intensifiers to acquire images at very low light levels and with extremely small exposure times (down to several nanoseconds (10^{-9} s)).

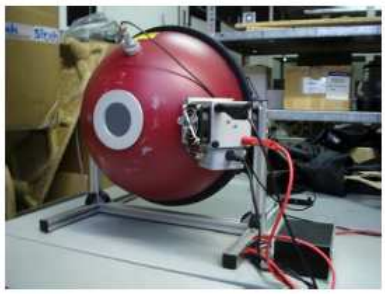

Abbildung 3.1: Ulbrichtkugel UMBB-300

High framing-rate (5 kHz) CCD camera High-speed image intensifier Homogeneous light source

Task:

- Setup of a test bench equipped with a homogeneous light source (Ulbricht sphere) , imaging optics, spectrometer, etc.
- Characterization of camera systems in terms of pixel-to-pixel sensitivity, linearity and optical distortion effects in a systematic way and for different operating conditions and types of cameras.
- Writing “test certificates” for the tested camera equipment

Profile:
You have general interest in electronic hardware, technical optics and optical diagnostics, have knowledge in, or are willing to learn about LabVIEW programming.

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