C.4 Calibration Overview

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Calibration Overview

- **Purpose of the calibration is to characterize the instrument so that accurate retrievals of scientific data can be performed**
- **Calibration results in the determination of an instrument model used in data processing and analysis**

- **The calibration plan is documented in 055-3265B**

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Calibration Approach

- **Two approaches to calibration**
  - **The instrument function can be measured directly**
    - **Provides accurate instrument function at time of calibration**
    - **Does not provide a way to incorporate incremental changes**
    - **Difficult to do on orbit**
  - **The instrument function can be modeled and measure the model parameters**
    - **Provides accurate instrument function**
    - **The model allows changes in the instrument function to be incorporated as they are detected by on-orbit calibrations**
    - **On orbit measurements of parameters are posible**

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Calibration Preflight

- **Goals**
  - Determine instrument function
  - characterize the CCD
  - determine the telescope alignment
- **Method**
  - Component Level
    characterize filters, etalon, fiber optic, objective telescope, &CCD
  - Assembly Level
    characterize telescope, telescope actuator, interferometer
  - System level
    determine line positions and normalization
    determine the instrument sensitivity (radiometric calibration)
    direct measurment of the instrument function
  - Spacecraft level
    Determine alignment of telescopes with respect to spacecraft

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Calibration Inflight

- **Goals**
  - Confirm instrument stablility
  - Determine zero wind line position
  - Confirm tangent altitude determination
- **Methods**
  - View internal lamps
    track locations of calibration lines
    track sensitivity
  - View atmosphere
    view thin emission layers to confirm LVDT calibration and tangent height determination
    view Rayliegh scattering to confirm normalization
  - Correlative measurements
    determine zero wind line position

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Calibration Summary

- **Preflight calibration consists of**
  - **developing an instrument model**
  - **measuring the model parameters**
- **Inflight calibration consists of**
  - **confirming the values of the model parameters**
  - **adjusting the values of the parameters adopted for the model**
- **Details of the calibration facilities and procedures will be found in section H.4**