

Scientific work of H. Fischer with respect to ``Radiation and Remote Sensing``

Preliminary remark: Some peer reviewed articles are mentioned as examples.

1. Development and application of new high quality IR-radiation measuring instruments for atmospheric research

→ Development of the Double-Pendulum-Interferometer (patent)

Literature: Burkert, Fischer et al. 1983

→ Construction of Fourier Transformation Spectrometers (MIPAS = Michelson Interferometer for Passive Atmospheric Sounding) for operation on ground, in aircraft, in balloon gondola and aboard satellites

General: Fischer 1994, Interdisciplinary Science Reviews

Ground measurements: Adrian, Fischer et al. 1991

Aircraft: Blom, Fischer et al. 1994

Balloon: Clarmann, Fischer et al. 1993

Satellite ENVISAT: Fischer et al. 2008, MIPAS-experiment

Lopez-Puertas, Fischer et al. 2005, measurement of non-LTE emissions

2. Development and application of accurate IR-Radiation-Transfer-Codes (RTC) for the atmosphere

among other things accomplishment of international intercomparisons of RTCs

Literature:

(1) Oelhaf, Fischer et al. 1983 a, Intercomparison of spectra

(2) Oelhaf, Fischer et al. 1983 b, Simulation of atmospheric spectra

(3) Funke, Fischer et al. 1998, line mixing

(4) Fischer et al. 1986, ITRA (Working group of IRC), quality of international RTCs

3. Remote Sensing

3.1 Development of inversion codes

Literatur: (1) Fischer 1975, Generalized iterative inversion method

(2) Clarmann, Fischer et al. 1991, Instabilities in Retrieval

(3) Kostsov, Fischer et al. 1999, Intercomparison of Inversion Methods

3.2 Pioneering work for the use of the movement of water vapor structures for the determination of wind vectors in the atmosphere

Literatur: (1) Fischer et al. 1981

(2) Eigenwillig, Fischer 1982

3.3 Non-LTE effects in the atmosphere and their influence on remote sensing of atmospheric parameters

Literatur: (1) Kostsov, Fischer et al. 1997

Non-LTE sounding

(2) Kutepov, Fischer et al. 1997

Vibration-rotational non-LTE

(3) Funke, Fischer et al. 2005

Measurement of non-LTE emission

4. General work (dictionary, encyclopedia)

→ Lexikon der Geowissenschaften, H. Fischer 2000, definition of radiation terms

→ Encyclopedia of Atmospheric Sciences: H. Fischer et al. 2003, Observations of Chemistry (Remote Sensing)