

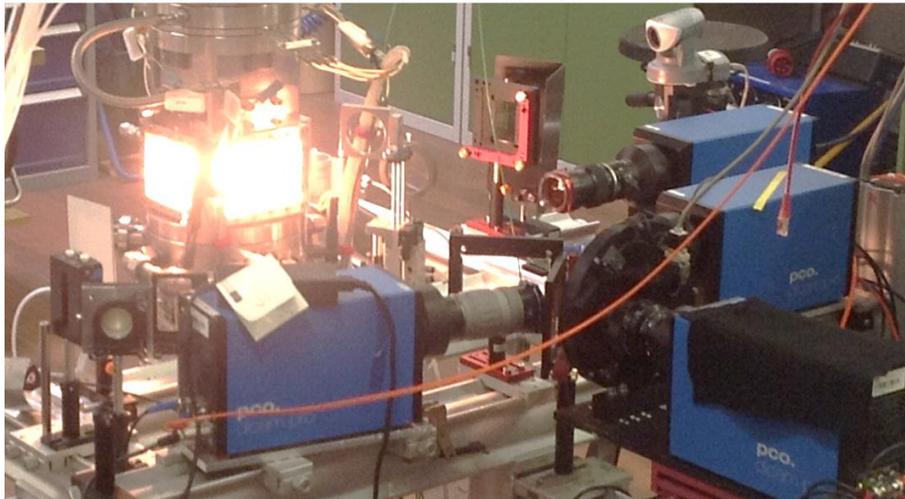
ADVANCED FLOW DIAGNOSTICS FOR AERONAUTICAL RESEARCH



First Announcement AFDAR Workshop



Optical Diagnostics in Combustion



16-17 October 2013

DLR Institute of Propulsion Technology
51170 Köln, Germany

General

The objective of AFDAR is to develop, assess and demonstrate new image-based experimental technologies for the analysis of aerodynamic systems and aerospace propulsion components. The main development focus is on new three-dimensional methods based on Particle Image Velocimetry (PIV) to measure the flow field around aircraft components, and on the high-speed version of the planar technique for the analysis in time-resolved regime of transient/unsteady aerodynamic problems. The work also covers the simultaneous application of PIV-based techniques and other methods to determine aero-acoustic noise emissions from airframe and to improve combustion processes to lower NO_x, CO₂ and soot emissions from engines.

In this context the workshop primarily addresses the advances of the PIV techniques in the area of combustion research, in particular in combination with other field measurement techniques. The main objective of the workshop is to provide the opportunity for exchange of up-to-date information on the numerous aspects of combined experimental field measurement techniques in combustion related research.

The AFDAR consortium is led by TU-Delft and consists of eight European partners including DLR as well as two non-European partners: the Institute of Thermal Physics (IOT SB RAS, Novosibirsk, RU) and Monash University (Melbourne, AUS). Three industries are involved in this work either as participant or contributing under subcontract and providing testing facilities.

For more information on AFDAR consult the website: www.afdar.eu

Scope and Main Topics

Within the AFDAR project the combination of PIV with different image based combustion diagnostics has been demonstrated in representative combustion configurations at laboratory-scale. The experiments were aimed at verifying the feasibility to integrate and simultaneously operate PIV and spectroscopic imaging methods such as laser induced incandescence (LII) or planar laser induced fluorescence (PLIF). The recovered space-time correlated data promises to provide a more complete picture of the unsteady phenomena and demonstrates the concept of combined diagnostics to investigate new combustion strategies. Four main topics were addressed in AFDAR:

- PIV and double OH Fluorescence imaging in a turbulent flame
- Joint PIV and LII measurements in a flame
- Combined stereo PIV and OH-Temperature PLIF measurements in lean premixed turbulent combustion
- PIV and chemiluminescence diagnostics for premixed swirling flames

Related contributions by non AFDAR partners are certainly welcome.

Organization

The workshop will be held over two days ending in the afternoon of the second day. A visit of DLR-Cologne's combustion facilities will be scheduled for the early afternoon of the second day, October 17th.

The event is co-organized with the annual DLR-internal workshop on combustion diagnostics, DIV9, which will commence on October 15th.

This workshop is open for all AFDAR partners and also non-AFDAR members in order to share their recent results on combustion related flow diagnostics. Due to space limitations the number of workshop attendees is limited to 35 people max., with priority given to AFDAR and DLR members.

Registration

Please fill out the attached registration form and indicate your (preliminary) title of contribution, if you are planning to give a talk at the workshop. A short abstract is much appreciated for the compilation of the workshop minutes.

Dead-lines and important dates

- Secure a hotel reservation as soon as possible
- Register by September 6th (Fax or email)
- Notice of acceptance by September 13th (by email)
- Provide brief abstract of intended presentations by October 7th (by email).

Accommodation

A total of 40 hotel rooms have been blocked under the reference "**DLR-DIV**" at the *Hotel zur Quelle* (www.hotelzurquelle.de, 84.00 € / night) and *Hotel Geisler* (www.hotel-geisler.de, 63.00 € / night). Please make sure to book well in advance as Cologne hosts numerous trade fairs and other large events throughout the year.

Hotel zur Quelle offers a shuttle bus for the morning transfer from the hotel to DLR. *Hotel Geisler* is serviced by public bus (Line 162) with regular transfers to and from DLR.

Organizer

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How to reach DLR Köln?

The DLR Köln (Cologne) site is located south-east of Köln, close to the Köln-Bonn airport (CGN).

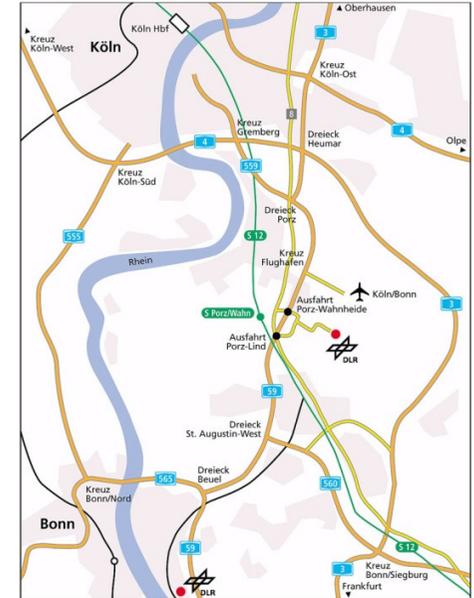
Arrival by train

The local trains ("S-Bahn") S 12 or S 13 leave from Köln Hauptbahnhof (Hbf), Siegburg and Troisdorf. The local train S 13 also leaves from Köln/Bonn Airport. Daytime departures take place every 20 min for both trains so that there is a train every 10 minutes. Get off at the railway station "Porz-Wahn" and continue from there by KVB bus number 162, direction "DLR". See instructions "By bus" below.

Note: Tickets for local train routes must be purchased in advance. If you need a ticket, you can get one from the ticket vending machines (Zone 2A, 2.60 Euro).

Arrival by bus

To get to DLR Köln by bus, take the KVB bus number 162 from "Porz-Wahn" train station. The bus sign will show "DLR". Please be sure that you take the one saying "DLR" as there are different routes for bus number 162. Exit at the last stop and you have arrived at the main gate of the German Aerospace Center DLR Köln.



Arrival by taxi

Upon arrival at Köln Hauptbahnhof (Hbf) take a taxi to "Porz-Wahnheide, DLR". Taxi stands are located on both, the north and south exit of the station. Tell the driver to take you to "Porz-Wahnheide, DLR". The price will very much depend on daytime and traffic but from Cologne central station to DLR without any traffic jam it should not exceed 35 Euros.

A taxi transfer from Köln-Bonn airport to DLR takes about 10 minutes and should cost about 10 Euros.



Deutsches Zentrum
für Luft- und Raumfahrt
German Aerospace Center



AFDAR Workshop Optical Diagnostics in Combustion

DLR-Köln, October 16th-17th, 2013



Registration form

To be sent to

Chris Willert
DLR Institute of Propulsion Technology
51170 Köln
Germany

Tel: 49 (0)2203 601 2308
Fax: 49 (0)2203 64395
Email: chris.willert@dlr.de
http : www.dlr.de/at/

Before September 30th 2013

Name: _____ Title: _____

Organization: _____

Address: _____

Phone: _____ Fax: _____ Email: _____

Title of contribution (optional): _____

Date of Arrival: _____ Time: _____

Date of Departure: _____ Time: _____

Signature: _____