



Postdoc – Open position

Impact of aerodynamics on the air-fuel mixture and combustion for multi-hole diesel injections

The study of the impact of aerodynamics on the air-fuel mixture and the combustion for multi-hole diesel injections is a strong contribution in the Engine Combustion Network and his theme around spray B (three-hole injector 90 μm in diameter). The purpose of this study is to answer these two questions:

- 1) Under zero aerodynamic conditions how spray B differs from spray A?
- 2) How the engine environment with swirl modifies the behavior of the jets compared to a free jet.

The candidate will take over the unique NOSE installation (New One Shot Engine). The interest of NOSE is the combination of the qualities of a vessel: pressure, constant temperature for a significant time $> 10\text{ms}$ coupled with large optical accesses and the qualities of an engine, i.e possibility to vary internal aerodynamics (Swirl Number). This bench is a link between studies in the vessel and on the optical engine. The new experiments carried out will validate models and respond to climate and environmental challenges.

The candidate will implement a series of diagnostics to establish a baseline database. Knowledge of these different means of measurement will be appreciated:

- High speed PIV measurements
- Liquid penetration of the spray by DBI and Mie scattering
- Reactive and non-reactive vapor penetration measurements by Schlieren image
- Lift off distance measurements by detecting the OH^* chemiluminescence
- KL and LII measurements

The candidate will participate to the ECN workshop meeting.

Qualifications

Post Doc candidates should have abilities to implement optical diagnostics, to conduct experiments on high pressure and high temperature vessel and knowledge in the phenomena involved in the diesel injection.

Appointment period:

The initial appointment period is one year, with renewal possible up to three years total, subject to continued project funding and satisfactory performance. Gross salary evolves between 2400€ and 3400€ per month, depending on candidate experience.

Application:

Candidates will be required to provide: a detailed academic CV; list of publications, abstracts and significant presentations; two letters of recommendation. Direct all the inquiries to Camille Hespel (camille.hespel@univ-orleans.fr).

Laboratory:

The research will be performed into the Energy, Combustion and Engine group of the PRISME laboratory. This group is composed of more than 35 researchers and students and is working on the chemical and physical understanding of the combustion process for the Internal Combustion Engine area on real engines, research engine with or without optical access and on high pressure and high temperatures vessels (laminar and turbulent vessel, sprays, auto ignition delays...)