



The **French-German Research Institute of Saint-Louis (ISL)** situated in the border triangle of Germany, France and Switzerland is an internationally renowned research institute belonging to a global industrial and economic network. The spectrum of our core activities comprises a variety of topics: aerodynamics, energetic and advanced materials, lasers and electromagnetic technologies, protection, security and situational awareness. Our activities are related to both basic and applied research.

ISL is offering a **PhD Position**

Research field: Laser and electromagnetic technologies

Development of a high-power continuous-wave laser source based on Er^{3+} :YAG

Multi-kW CW laser sources are currently gaining interest due to their possible applications in civilian and military fields.

The ISL has developed in the past a high power Er:YAG laser source which, unfortunately, can only be operated in quasi-cw mode.

Using slab lasers, several hundred watts of output power with a relatively high beam quality have been realized: the aim of this study will be to use the available knowledge of ISL on Er:YAG laser technology to explore new laser architectures and to realize a multi-kW Er^{3+} :YAG laser with a good beam quality.

The PhD candidate should study and set up an end-pumped Er^{3+} :YAG slab laser according to the following steps:

- Definition of the diode optical pumping scheme
- Optimization of the cooling of the laser medium
- Investigation and mitigation the thermal lens, in view of improving the beam quality of the output laser
- Analysis and reduction of the loss mechanisms such amplified spontaneous emission and parasitic oscillating modes

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