

Call for contribution of expertise

CERN invites collaborating institutes and universities to contribute the expertise of their qualified employees to the activity described below.

Start date: 01/09/2018

Duration: One year, possible extension to a maximum of up to three years.

Project/Activity: Mechanical engineer

Detailed description of Activity:

To extend its discovery potential, the LHC will undergo a major upgrade to increase its luminosity (rate of collisions) by a factor of 10 beyond its design value. One goal of the project is the upgrade of the LHC collimation system, which provides beam cleaning and protection to delicate accelerator components such as the superconductive magnets. The HL-LHC WP5 is the work package dedicated to the design, production, testing and installation of the new collimators and collimation equipment in the framework of the system upgrade.

You will join the WP5 engineering team within the EN-MME group, with the following tasks:

- Participate to the design of new collimators and collimation equipment, determining the optimal technical solutions through analytical and numerical analyses.
- Contribute to the development of novel materials for the collimator jaws, optimizing the composition and production cycles and defining adequate surface treatments and coatings to improve the ultra-high vacuum and RF performance.
- Design ad-hoc experiments to validate the design solutions in terms of materials and geometry. This includes: static and dynamic mechanical tests at CERN and international collaborators; thermo-physical material characterization; advanced beam impact experiments in facilities like HiRadMat.
- Follow up the industrial production of the novel jaw materials at the premises of CERN subcontractors.
- Write the documentation required for the follow-up of the project, including calculation reports, technical notes, engineering specifications and procedures. Prepare scientific papers for international journals to describe breakthrough advancements in numerical, materials and technology fields.

Profile: Master degree in mechanical engineering or equivalent. Technical experience with finite element codes and 3D CAD tools. Familiarity with precision manufacturing, assembly and construction methods, including preparation, planning, drawing and quality control. Attitude to teamwork in a multidisciplinary environment and to follow-up components from conception through to operation.

Specific details: A good proficiency in spoken and written English is required, with the ability to draw-up technical specifications and/or scientific reports and to make oral presentations. French is an asset, and the willingness to learn French is required. Work in controlled radiation areas, underground premises, on shift, and during nights/weekends when needed. Valid driving license. Good working knowledge of ANSYS would be an asset.

Status at CERN: Associated Member of the Personnel (Project Associate or COAS).

Conditions in accordance with CERN's Staff Rules and Regulations and Administrative Circular No. 11. Subsistence allowance is payable by CERN to cover the additional cost arising from the individual's (and, as applicable, their family's) stay in the local area while performing activities at CERN.

Option: Collaborating institutes and universities can propose to support the activity of the qualified employees participating in this "Call for contribution of expertise" with students or other employees. Their status and Subsistence allowance when applicable will be adapted to their relation with their institutions

Contact person: Isabel Bejar Alonso

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