

## 1. Position identification

**Title of post :** postdoc position withing the ANR project « SUPER2DTMD - Shining light on superconducting collective modes in 2D transition metal dichalcogenides »

**Type of contract :** CDD postdoctoral researcher

**Category (A,B or C) :** A

**Contract/project period :** 2 years

**Expected date of**

**employment :** 09/01/2024

**Proportion of work :** 100 %

**Workplace :** Université de Strasbourg, Institut de Science et d'Ingénierie Supramoléculaires (I.S.I.S), Centre Européen de Sciences Quantiques (CESQ)

**Desired level of education :** PhD

**Experience required :** between 0 and 2 years after the PhD

**Contact(s) for information on the position (identity, position, e-mail address, telephone) :** Dr. David Hagenmüller (dhagenmuller@unistra.fr)

**Date of publication :** 15/04/2024

**Closing date for the receipt of applications :** 25/05/2024

## 2. Research project or operation

Theoretical study of the collective modes in TMD superconductors

## 3. Activities

### ➤ Description of the research activities :

- Study of quasi-2D superconductivity in TMDs and the effects of spin-orbit coupling and singlet-triplet spin mixing observed in thin layers of NbSe<sub>2</sub> and NbS<sub>2</sub> on the collective modes of the superconductor.
- Calculation of Raman response functions and THz optical conductivity of thin layers of TMDs in the presence of a current flow
- Investigation of strong and ultra-strong coupling of collective modes of a quasi-2D superconductor to THz metamaterials, assessing the possibility of a "Higgs polariton" condensate and other exotic phases.

➤ **Related activities :**

1/2

## 4. Skills

➤ **Qualifications/knowledge :**

PhD in theoretical physics  
Solid background in condensed-matter physics

➤ **Operational skills/expertise :**

**Analytical calculations and numerical methods**

➤ **Personal qualities :**

## 5. Environment and context of work

➤ **Presentation of the laboratory/unity :**

Centre Européen de Sciences Quantiques

**Staff :** 40

**Staff to supervise :** 0

**Location :** Campus Cronenbourg, Université de Strasbourg

➤ **Hierarchical relationship :**

David Hagenmuller, Chargé de recherche CNRS

➤ **Special conditions of practice (notice attached):**

Researcher position

**To apply, please send your CV, cover letter and diploma to :**

**David HAGENMULLER : [dhagenmuller@unistra.fr](mailto:dhagenmuller@unistra.fr)**