

## Announcement for PhD position (deadline 7 November 2020)



UNIwersytet  
JAGIELLOŃSKI  
W KRAKOWIE

Instytut Fizyki

im.

Mariana Smoluchowskiego

The research group of P. Moskal invites applications for a PhD position in the project entitled „Precision symmetry tests between matter and anti-matter via measurements of the decays of positronium atoms using the modular JPET tomograph”.

The minimum requirements for candidates are:

- Experience in data analysis, statistics and computer programming, and for Ph.D. student master degree in the field of Natural Sciences, Engineering, Computer Science,

Mathematics or related field of science.

- Good knowledge of English (spoken and written)

The successful applicant is expected to perform following research tasks:

**Student-1:** Tests of C symmetry in decays of positronium atoms: Data taking;

Tuning of the calibration of the whole detection system in view of the

studied reactions; Identification and selection of registered events;

Simulations of positronium decays breaking the studied symmetries;

Simulation of the physical and instrumental background. Analysis and

interpretation of the collected data including detailed determination of

statistical and systematic uncertainties. Interpretation of results,

preparation of scientific articles, presentation of results at conferences and scientific meetings.

**Student-2:** Tests of T and CPT symmetries in decays of positronium atoms:

Data taking; Tuning of the calibration of the whole detection system in view

of the studied reactions; Identification and selection of registered events;

Simulations of positronium decays breaking the studied symmetries;

Simulation of the physical and instrumental background; Determination of

the degree of polarisation of the positronium source; Analysis and

interpretation of the collected data including detailed determination of

statistical and systematic uncertainties. Interpretation of results,

preparation of scientific articles, presentation of results at conferences and

scientific meetings.

**Student-3:** Tests of CP symmetry in decays of positronium atoms: Data taking;

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Tuning of the calibration of the whole detection system in view of the studied reactions; Identification and selection of registered events; Simulations of positronium decays breaking the studied symmetries; Simulation of the physical and instrumental background; Analysis and interpretation of the collected data including detailed determination of statistical and systematic uncertainties. Interpretation of results, preparation of scientific articles, presentation of results at conferences and scientific meetings.

Tests of discrete symmetries in decays of positronium atoms: Data taking; Tuning of the calibration of the whole detection system in view of the studied reactions; Identification and selection of registered events; Simulations of positronium decays breaking the studied symmetries; Simulation of the physical and instrumental background; Determination of the degree of polarisation of the positronium source; Analysis and interpretation of the collected data including detailed determination of statistical and systematic uncertainties. Interpretation of results, preparation of scientific articles, presentation of results at conferences and scientific meetings.

**The candidates should submit applications containing the following documents**

1. Short application including motivation letter (maximum two pages),
2. Scientific CV including list of publications
3. At least one letter of recommendation (preferentially send directly to P. Moskal via e-mail)

All documents should be submitted in the pdf format to the address:  
[p.moskal@uj.edu.pl](mailto:p.moskal@uj.edu.pl)

The position will be available initially for one year, but may be renewed for further two years (maximally) by mutual agreement.

The stipend amounts to 2000 PLN per month (brutto-brutto).

The deadline for submission of applications is 7 November 2020.

The candidates will be informed (by email) of the result of the selection on 10th of November 2020.

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