

# Asztalos Örs curriculum vitae

---

Date of birth: 1989. June 15, Medias, Romania  
Phone: +36706035164  
Residence: 1094 Budapest, Márton utca 12, 4. em, 5.a, Hungary  
E-mail: asztalos@reak.bme.hu



## PROFILE:

I am a physicist and doctoral candidate, involved in various aspects of fusion energy research since 2013, primarily focusing on modelling and experimental analysis of beam emission spectroscopy (BES) diagnostics. My contribution to the field are based on atomic collisions and subsequent collisional radiative models; the design and optimization of diagnostics systems, and the validation of first principle plasma physics codes.

## EMPLOYMENT:

- **2020 – ongoing: as a Physicist** at the Fusion Plasma Physics Department of the Centre for Energy Research ([here](#)), Budapest.
  - Development of analysis tools for JT-60SA and W-7X EDICAM video diagnostics.
  - Correction to sodium beam with plasma cross-sections and collisional radiative models.
  - Design and optimization of beam emission spectroscopy diagnostics on various fusion devices.
    - Effort for diagnostic system design on EAST and W7-X lead to the successful build of the diagnostics systems.
    - Diagnostics system designs for JT-60SA, ITER pedestal observation, NSTX and HSX are under consideration.
- **2020 – ongoing: as a research assistant** at the Institute for Nuclear Techniques of the Budapest University of Technology and Economics ([here](#)), Budapest.
  - Development of collisional radiative models towards modelling of neutral beam with interactions with various neutral and charged plasma components.
  - Development of BES synthetic diagnostics systems.
  - The exploitation of beam emission synthetic diagnostics towards first principle turbulence model validation and modeling aided interpretation of measurement data.
  - Development of beam-atom with neutral particle collisional radiative models towards the estimation of neutral density profiles in fusion devices.
  - Teaching activities.
- **2015 – 2016: as a research assistant** at the Institute for Nuclear Techniques of the Budapest University of Technology and Economics ([here](#)), Budapest.
  - Development of beam emission diagnostics systems for JT-60SA.

## STUDIES:

- **2020 – 2022: Doctoral Candidate** at the Institute for Nuclear Techniques of the Budapest University of Technology and Economics ([here](#)), Budapest (HU).
- **2016 – 2020: PhD studies** in fusion plasma physics at the Institute for Nuclear Techniques of the Budapest University of Technology and Economics ([here](#)), Budapest (HU).

- **2012 – 2015: MSc studies** in nuclear physics at the Institute for Nuclear Techniques of the Budapest University of Technology and Economics ([here](#)), Budapest (HU).
- **2008 – 2012: BSc studies** degree in physics at the Faculty of Physics of the Babes-Bolyai University ([here](#)), Cluj Napoca (RO)

## COMPETENCES:

- Programming skills:
  - Python: 5 years of backend code development of synthetic diagnostics and workflows.
  - IDL, C and MATLAB: various experiences ranging on the timespan of individual projects.
- Languages:
  - English: Cambridge AE: level C2 (2007)
  - German: Deutsches Sprachdiplom: level C2 (2008)
  - Hungarian and Romanian: native speaker
- Soft skills:
  - Supervised 3 BSc thesis works from 2018
  - Managed seven scientific student competition projects between 2016 – 2021

## POSITIONS:

- **2020 – ongoing:** Secretary of the Fusion Group of the Hungarian Nuclear Society.

## PROJECTS:

- **2021 – ongoing: as a Home Based Consultant** for the IAEA, Atomic and Molecular Data Unit, Vienna, Austria ([here](#)).
  - Importing and updating alkali and hydrogen beam cross-sections with various plasma particles, aimed at updating and modernizing the ALADDIN atomic database.
  - Development of API to allow for easy access to ALADDIN data for any codes and frameworks requiring atomic cross-sections.
- **2020 – ongoing: Work Package Super Advanced (SA):** aimed at developing Video Diagnostics software for EDICAM image processing and demonstrate feasibility of fluctuation BES on JT-60SA.
- **2018 – ongoing: Work Package JET** aimed at modelling aided experimental data evaluation on the JET tokamak to assess the isotope effect on filament dynamics.
- **2018 – 2020: Work Package Medium-Sized Tokamaks** aimed at modelling aided experimental data evaluation on ASDEX Upgrade tokamak and validation of the HESEL first principle plasma physics code.
- **2017 – ongoing: RENATE-OD** development beam emission spectroscopy synthetic diagnostics in python aimed to compute the beam evolution of any neutral beam in plasma and synergize with various first principle plasma physics codes.
- **2016 – ongoing: IAEA Neutral Beam CRP** benchmarking various beam emission and evolution codes.
- **2016 – 2020: Work Package Code Development** aimed at integrated modelling effort in Kepler to generate synthetic diagnostics workflows coupled to turbulence or MHD workflows for model validation efforts.
- **2019 – ongoing: CHERAB project** integration and incorporation of alkali beam and fluctuation BES codes into the CHERAB framework.