## Jake Cale Baguley

## University of Bristol


## X-ray Astronomy

# Galaxy cluster detection

**About Me;**

Physics has been a passion for me from a young age. This led to me taking a master's degree in physics at Bristol university, culminating in a research project working with simulations of the Deep Underground Neutrino Experiments response to the neutrino signal from supernova. I developed an interest in programming during a 4-week work placement at the university of Hertfordshire, where I programmed an embedded system to control a small robot as it drove around the floor. Outside of academia I enjoy playing board games along with building and painting miniatures for war gaming.

**My research;**

I'm currently working to apply clustering algorithms to XMM's source catalogue. This will allow us to look for potential improvements to the current method for classifying Galaxy Clusters.
The main focus of the project is to develop a method of detecting galaxy clusters that integrates the raw XMM observations with observations at other wavelengths. This will involve a combination of more traditional detection methods and machine learning to develop a technique better able to adapt to the data it is presented.

**Data Intensive Skills and interests:**

I am proficient in C having used it in my 2nd and 3rd year computational Physics units, a 4th year multiprocessing physics unit in which I created an N-body simulation using an Oct-tree approximation, and an introduction to high performance computing unit through the CDT. I have experience in python having used it for the CDT's machine learning, data analysis and applied data science courses and for quick prototyping within my research.
I also have some experience with C++ from my 4th year Msci project simulating supernova neutrino detection at the Deep Underground Neutrino Experiment (DUNE) and C# through work with Unity in my free time. I have experience with SQLite3 through the data bases course.
I'm interested in high performance computing particularly in the application of multi-threading to complex calculations. I'm also interested in machine learning and its application to object recognition.

**Future goals and desires:**

I'm looking to work on my machine learning and high-performance computing skills with the aim of applying these to a future career in research.