

Rebecca Sheppard  
23c Wright Crescent, West Bank, Widnes, WA8 0EE  
<https://uk.linkedin.com/in/rebecca-sheppard-3224812ba>  
[2003sheppard@gmail.com](mailto:2003sheppard@gmail.com)  
07518148497

An aspiring mathematician with a research background in discrete geometry. I intend to progress into academia-based research starting with a PhD.

## **Education**

### **University of Liverpool (2021-2025)**

#### **MMath (Hons) Mathematics**

I took modules in a variety of topics in pure and applied mathematics. I concentrated on the pure mathematics pathway of modules in my studies, developing an understanding of topics in geometry, number theory, algebra and group theory. I took two project-focused modules (to a total of 45 credits) in which I presented my findings to a small group with slides developed using LaTex.

### **Cronton Sixth Form College (2019-2021)**

#### **A Levels**

A\* Mathematics; A\* Further Mathematics; A\* Physics; A\* Chemistry

### **Wade Deacon High School**

9 GCSEs grades 7-9 including Mathematics and English; Cambridge National Certificate grade D2

## **Experience**

### **MATH490: Project for MMath (2024 – present)**

#### **University of Liverpool**

This project expands on the study of integer circles as introduced in my MATH499 project. We investigate the density of the intersection of integer circles and introduce the notion of inscribed integer circles of a polygon, which lead to study in the area of splitting integer angles.

### **Summer Research Project in Integer Geometry (2024)**

#### **University of Liverpool**

This project was funded jointly by the University of Liverpool and the Undergraduate Research Bursary from the London Mathematical Society. This project focused on finding the spectra of radii of circumscribed circles in integer geometry.

### **MATH499: Project for MMath (2023 – 2024)**

#### **University of Liverpool**

In this project we introduced the notion of a circle in integer geometry and computed the density of integer circles with respect to an exhaustive sequence of subsets. We explored the idea of integer n-spheres in higher dimensions and of the intersection of multiple integer circles.

## **Research Articles**

Oleg Karpenkov, Anna Pratoussevitch, and Rebecca Sheppard. *Circumscribed Circles in Integer Geometry*. 2024. arXiv: 2412.04662 [math.NT]. url:<https://arxiv.org/abs/2412.04662>.

## **Awards and Accolades**

### **Willis Prize in Mathematics (2024)**

#### **University of Liverpool**

The Willis Prize is awarded for excellence in examination results in the third or fourth academic year.

### **Undergraduate Research Bursary (2024)**

#### **London Mathematical Society**

I was awarded this bursary by the London Mathematical Society to expand my research in integer geometry.

## **Additional Skills**

Mathematical writing using LaTex

Programming using Python, Maple, R and MATLAB

**References available on request**