HKU Algebra and Number Theory Seminar

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Run Run Shaw Building, Room 210

Title: An application of Baker's method on the solutions of exponential Diophantine equations.

Abstract: "Why Diophantine equations are interesting to study?"

Many geometric questions about triangles, esp. right triangles, with integral or rational side lengths lead to low-degree Diophantine equations. The equation $a^2 + b^2 = c^2$ is too famous to say anything about. Fermat was inspired to show $a^4 + b^4 = z^2$ has no nontrivial integral solutions in order to prove no right triangle with rational side lengths can have area equal to a perfect square (you can't "square" a rational right triangle).

So there are several methods to solve these Diophantine equations, for ex. In 1995, Andrew Wiles in collaboration with Taylor by using modular method proved that the Fermat's equation $x^n + y^n = z^n$ for $n > 2$ has no positive integer solutions.

Nowadays exponential Diophantine equations are often solved by combining various methods including Baker's method, the modular method, some congruence theory etc.

This talk is about an application of Baker's method, how we can use the Baker's method to bound the solutions of some exponential Diophantine equations.