Communication complexity is an area of computational complexity theory that studies the amount of communication required to complete a computational task. Communication complexity gives us some of the most successful techniques for proving impossibility results for computational tasks.

Information complexity connects communication complexity with Shannon’s classical information theory. It treats information revealed or transmitted as the resource to be conserved. On the one hand, information complexity leads to extensions of classical information and coding theory to interactive scenarios. On the other hand, it provides us with tools to answer open questions about communication complexity and related areas.

In the first lecture, we will give a high-level overview of communication and information complexity.

In the second lecture, we will talk about the question of minimizing surface area of tiles, which dates back to the 19th century, but turns out to have surprising connections to computational complexity and information theory.

In the third lecture, we will circle back to applications of information complexity to problems in computational complexity.

The Blyth Lecture Reception will take place before the first public lecture at 3PM on Wednesday, November 9, 2022 in the Department of Mathematics’ Lounge, 6th floor, Bahen Centre, 40 St. George Street.