

## ***Embedded graph 3-coloring and flows***

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**Time: May 29th, 11:00 - 11:50**

**Venue: Room 102, Shanghai Center for Mathematical Sciences**

### **Abstract:**

A graph drawn in a surface is a near-quadrangulation if the sum of the lengths of the faces different from 4-faces is bounded by a fixed constant. We leverage duality between colorings and flows to design an efficient algorithm for 3-precoloring-extension in near-quadrangulations of orientable surfaces. Furthermore, we use this duality to strengthen previously known sufficient conditions for 3-colorability of triangle-free graphs drawn in orientable surfaces. This is joint work with Caroline Bang, Zdeněk Dvořák and Emily Heath.