

# SCMS Seminar



## REGULARITY OF FREE BOUNDARY IN OPTIMAL TRANSPORTATION

**Dr. Shibing Chen**

**The Australian National University**

### Lecture

**Time:** 3:00-4:00 pm., Thursday, January 4, 2018

**Venue:** Room 2201, East Main Guanghai Tower, Handan Campus

**Abstract:** I will present some recent results on the interior higher order regularity of free boundary in the optimal partial transport problem when the source and target are sufficiently far apart. The general  $C^{1,\alpha}$  regularity was established by Caffarelli and McCann. I will also discuss a related model for free boundary arising in optimal transport problem. In particular, we establish Lipschitz and  $C^{1,\alpha}$  regularity of the free boundary under mild conditions. Higher regularity under some extra conditions can also be proved.

$$b_i - \frac{\left(\sum_{j=1}^{i-1} a_{ij}x_j^{(k)} + \sum_{j=i+1}^n a_{ij}x_j^{(k)}\right)}{a_{ii}}$$
$$\Delta y_i = \int_{x_i}^{x_{i+1}} \frac{y' dx}{a_{ii}}$$
$$\int_{x_k}^{x_{k+1}} f(x, y) dx = \int_{x_k}^{x_{k+1}} y' dx = y(x)$$
$$-\sqrt{(y_n + 0.5\tau k_1)^2 + (t_n + 0.5\tau)^2}$$