

The background of the slide is a faded image of the Jiaotong University gate. The gate is a large, white, curved structure with the university's name in English, "JIAOTONG UNIVERSITY", on the right side and in Chinese, "交通大学", on the left side. The gate is flanked by trees and a building with a red roof. A large, dark purple rectangular box is superimposed over the center of the image, containing the title "作业7" in yellow text.

作业7

2021-2022学年第2学期

作业7

1. (教材90页, 习题第9题) 利用Sherman-Morrison-Woodbury公式, 由 H_{k+1}^{SR1} 推出 B_{k+1}^{SR1} 。
2. 若DFP方法中采用强Wolfe准则确定步长, 证明: $\mathbf{s}_k^T \mathbf{y}_k > 0$ 。
3. (教材92页, 上机题第2题) 编写SR1方法, DFP方法和BFGS方法程序并提供数值实验结果报告。考虑最优化问题:

$$\min \sum_{i=1}^m r_i^2(\mathbf{x})$$

其中: $r_i(\mathbf{x})$ 由Watson函数定义。

4. 设 $f(\mathbf{x}) = \frac{1}{2}x_1^2 + x_2^2$. 设初始点 $\mathbf{x}_0 = (1, 1)^T$, 对于 $\Delta_0 = 1$, 用折线法计算下一个迭代点 \mathbf{x}_1 。