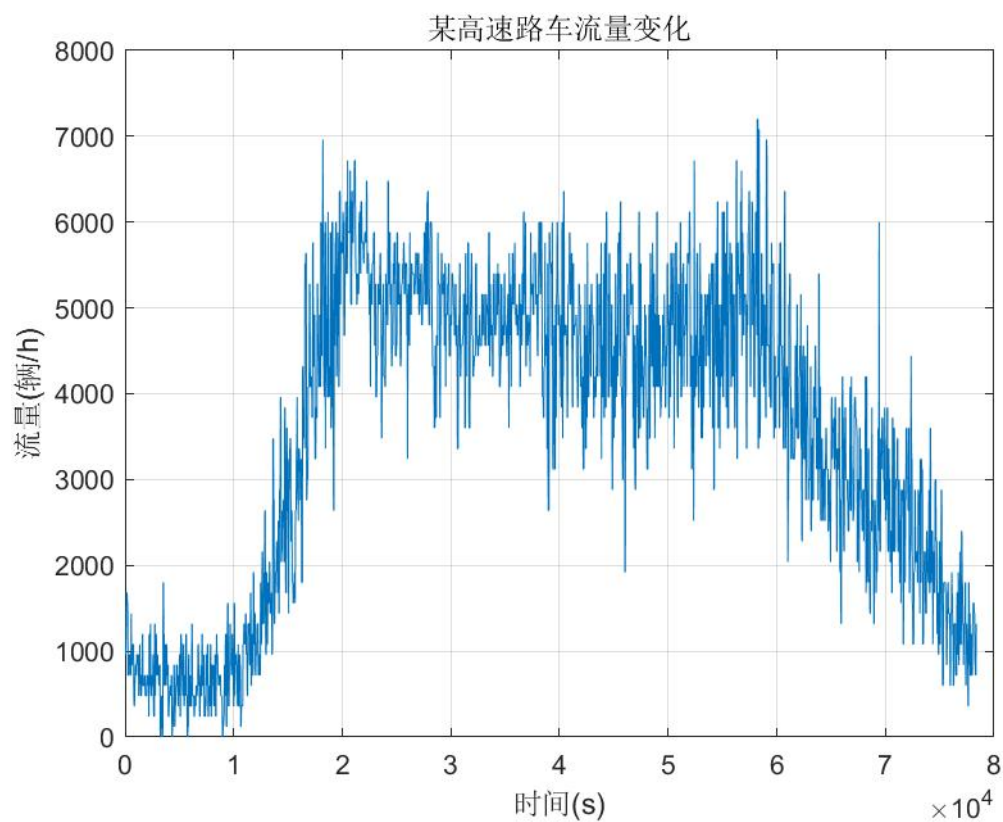


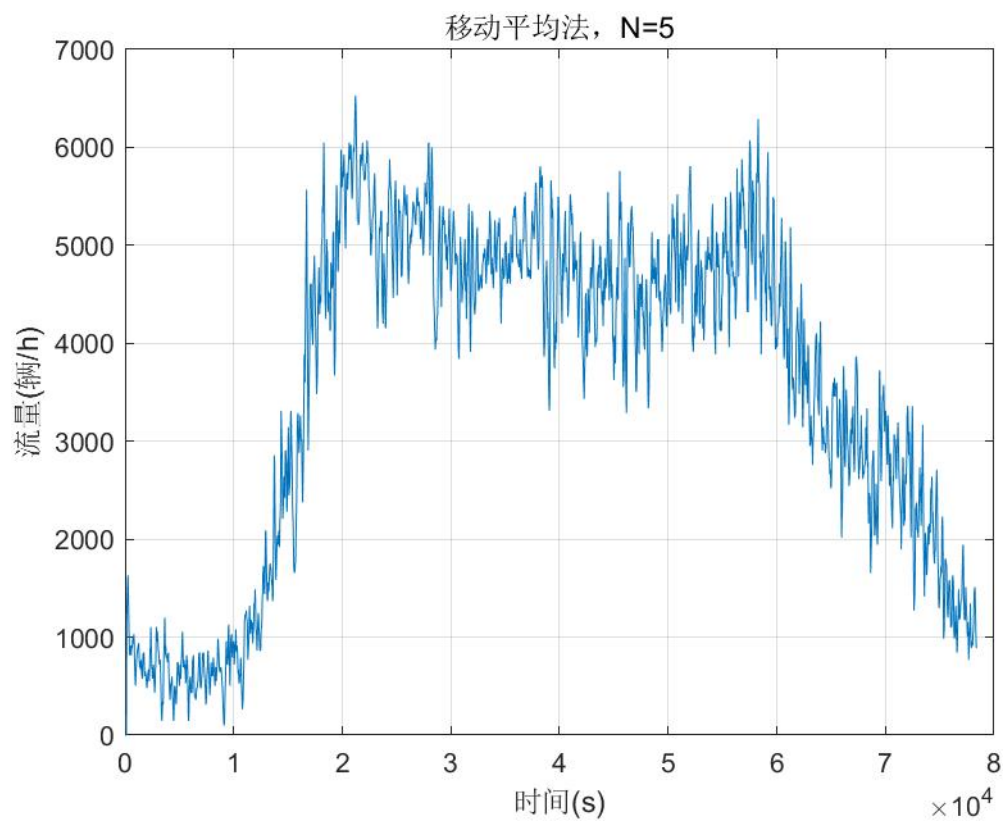
第一次作业

1. 数据可视化

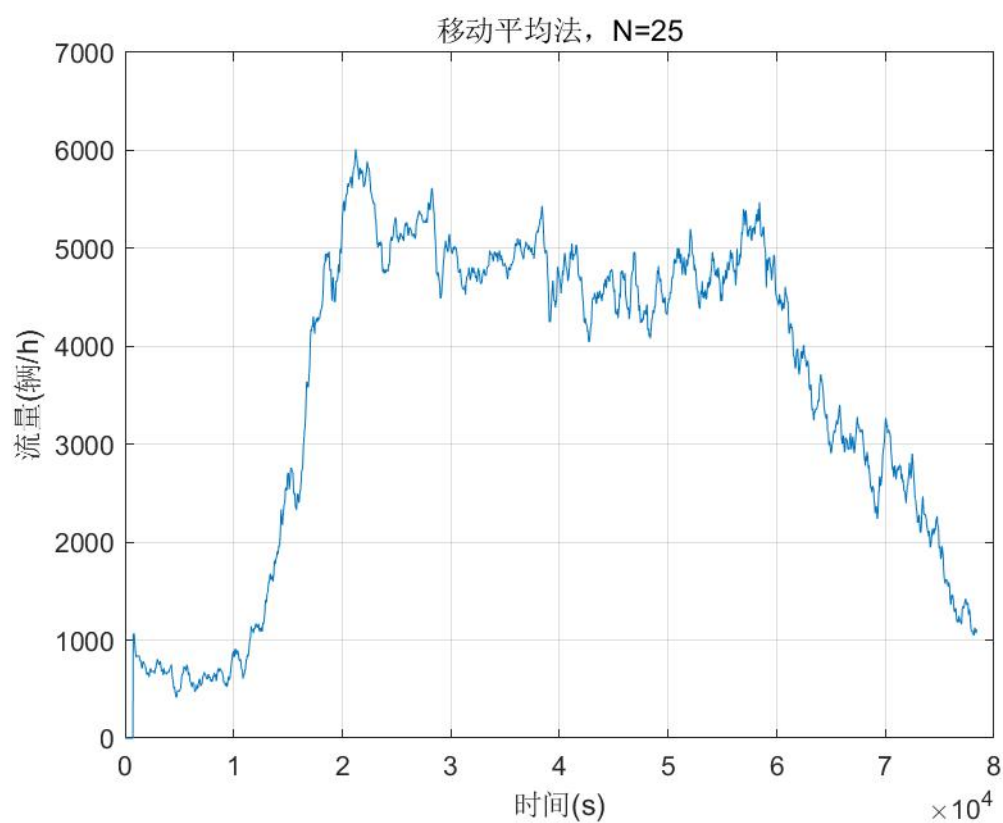


2. 移动平均法

(1) $N=5$

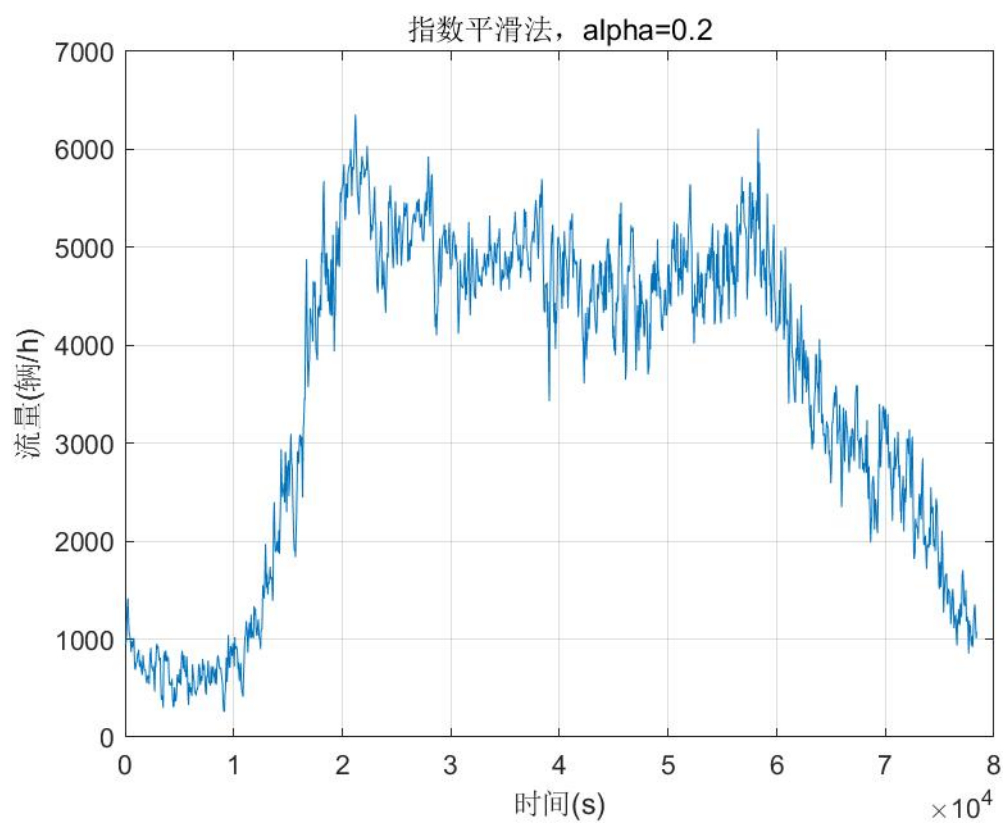


(2) $N=25$

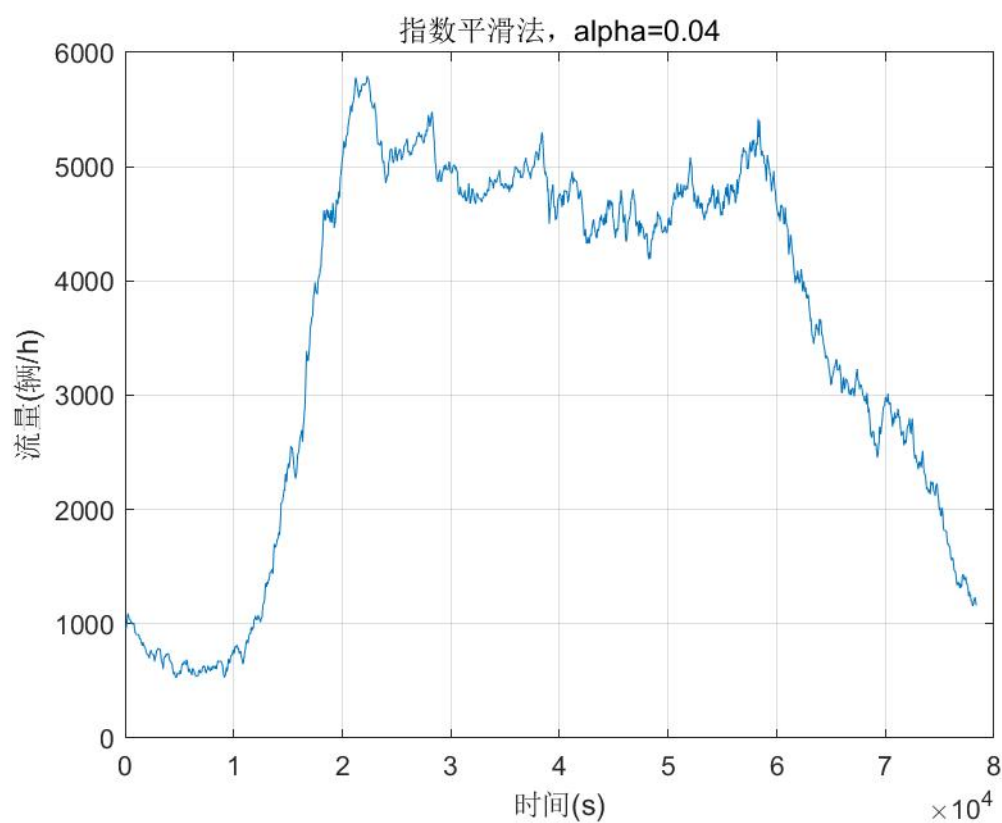


3. 指数平滑法

(1) $\alpha=0.2$



(2) $\alpha=0.04$



4. 推导上述两种方法的增量形式

① 移动平均

$$t \leq N \text{ 时} \quad y_t^* = y_t$$

$$t > N \text{ 时} \quad y_t^* = \frac{1}{N} (y_{t-1} + y_{t-2} + \dots + y_{t-N})$$

$$y_{t+1}^* = \frac{1}{N} (y_t + y_{t-1} + \dots + y_{t-N+1})$$

$$y_{t+1}^* = y_t^* + \frac{1}{N} (y_t - y_{t-N})$$

② 指数平滑

$$y_{t+1}^* = \alpha y_t + (1-\alpha) y_t^*$$