

LARGE DEVIATIONS
HOMEWORK 5

Deadline for handing in solutions: April 4.

1. Prove that the rate function $I_\rho^2(\nu)$ defined in Theorem II.8 for the pair empirical measure satisfies

$$I_\rho^2(\nu) = I_\rho(\bar{\nu}) + I_{\bar{\nu}}^2(\nu) \quad (1)$$

where $\bar{\nu} = (\sum_{t=1}^r \nu_{1t}, \dots, \sum_{t=1}^r \nu_{rt})$. In addition to the explicit calculation yielding (1), can you also give an intuitive explanation for the formula?