

Exercise 4, Nov 24, 2016 to be handed in December 1

Read the short paper: Bastian, Riehle, Erlhagen, Schöner: Prior information preshapes the population representation of movement direction in motor cortex *Neuroreports* 9:315-319 (1998) provided on the webpage. This provides background information to the lecture slides about population code in the motor cortex.

The following questions can be answered very briefly. They serve primarily to help you assess if you understood the paper.

1. Describe the task of the monkey in words. What is the time structure of the task? Illustrate that in a drawing that employs a time axis. What is the parameter whose encoding is being studied: Describe it in words and make a drawing that graphically illustrates that parameter.
2. Graphically illustrate the method of construction of the population representation. Explain the method in words (distribution defined over which axis, what is the variable? write down and explain the formula).
3. Illustrate and describe in words the time course of the distribution of population activation observed in this task (Fig. 2 in the paper).
4. What does the "concentration" measure assess? What does the dependence of concentration on the number of pre-cued targets shown Figure 3 imply?