**Exercise 5 – questions**

1. What is the analytic signal and why is it important in the analysis of electrophysiological data? (5 points)
2. Describe two ways to obtain a narrowband analytical signal. (5 points)
3. Which type of noise in electrophysiological recordings varies with the country in which the recording was carried out? (3 points)
4. Which type of ‘noise’ can be removed with a high-pass filter? (2 points)
5. What are the two major applications of independent component analysis in neuroimaging? (5 points)
6. What has been suggested to be the relationship between phase synchrony and amplitude coupling? Does this relationship vary between frequency bands? (5 points)
7. How could analysis of phase synchrony be used with epileptic patients? (5 points)
8. Which are the two main types of cross-frequency coupling that have been studied and how are they thought to “connect” oscillations of different frequencies? (5 points)
9. What is power-law scaling and how has it been observed in the brain? (5 points)
10. Which is the range of DFA exponents typically observed in neuronal time series and what are the characteristics of processes with exponents in this range? (5 points)
11. What are some of the proposed benefits of the brain operating near a critical phase transition? (5 points)