**DFL Resurrecting Sigmoid,**

**Readings for week 4**

This week, we will cover the final topic before we can get to the calculations in the paper: free probability. This is a huge topic, and quite difficult, but to understand the paper, luckily we don’t need to learn too much of the field. The basic question to think about is: *given two random matrices* *whose spectral densities we know, when can we calculate the spectral density of their sum or product?*

**Livan, RMT** (<https://arxiv.org/pdf/1712.07903.pdf>**)**

**Chapter 17,** Born to be Free

**Partial Freeness of Random Matrices** (<https://arxiv.org/pdf/1204.2257.pdf>)

**Section 1**

**Emergence of Spectral Universality in Deep Networks** (<https://arxiv.org/abs/1802.09979>)

**Section 2.3**

**Appendix, Sections 1 and 2**