**DFL Resurrecting Sigmoid,**

**Readings for week 5**

This week, we finally get to the calculations in the paper! We have learned in the past several weeks most everything we’ll need to derive these results. We’ll derive everything we need to investigate dynamical isometry in neural networks with nonlinearities ReLU and Hard-Tanh and with weights having orthogonal and gaussians initializations. There is one main reading: the paper!

**Resurrecting the Sigmoid**

Pennington et al. (<https://arxiv.org/pdf/1711.04735.pdf>)

**Section 2.4**

**Section 2.5**

**Section 2.5.1**

**Section 2.5.2**

**Helpful References on RMT [from lectures 3 and 4]**

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

Chapter 1, introduces RMT

Chapter 2, spectra of random matrices

(corresponds to the ‘avoided crossings’ problem in the homework)

Chapter 3, introduction to some random matrix ensembles

(corresponds to the ‘GOE’ problem in the homework)

Chapters 6 and 7

Chapter 17