

EE 554, HW#3, Spring 2023, Dr. McCalley, Due Thursday 3/9

1. We argued in class that, for a 2-pole machine, the mutual inductances for rotor windings in quadrature (e.g., L_{FG} , L_{FQ} , L_{GD} , L_{DQ}) are zero because the flux from one winding does not link with the coils of the other winding. Explain, using a physical structure of a 4-pole machine together with a drawing of d-axis flux lines, why the d-axis flux does not link with the q-axis windings.

2. Problem 4.1

3. Problem 4.2

4. Problem 4.6

5. Problem 4.11

6. Problem 4.12

7. Problem 4.18