**ECE 580**

**Voluntary Project**

**Due December 6, 2021**

1. Express the pole frequency ωo , dc gain *H(0)* and the pole Q of a Rauch filter in terms of its element values. You may assume ideal opamp, so ϵ = 0.
2. For prescribed ωo, *H(0),* andpole Q values, what is the condition for having a minimum capacitance ratio *C1/C2* ?

Hint: use the expression for Q in terms of element values. Find the value of *G1/G2* for a minimum capacitance ratio *.*

1. Assume *H(0) =* 1 and *Q =* 2-1/2$\~ 0.707. $What is *C1/C2* ? How much does

*C1/C2* change if all resistors have the same value?

