Neutral curve

$$\det A_q = \det A - q^2 \left(d_{uu}a_{vv} + d_{vv}a_{uu} - a_{vu}d_{uv} - d_{vu}a_{uv}\right) + q^4 \left(d_{uu}d_{vv} - d_{vu}d_{vu}\right),$$

$$\det A_q = a^2 - q^2 D \frac{-a^3c + a^2 + abc - ac}{ca - a^2 - b} + q^4 D^2 \frac{c}{c - a - \frac{b}{a}}$$

We set to zero and solve for b to get:

$$b = \frac{D^2cq^4 + Dq^2(a^2c - a + c) - a^3 + a^2c}{Dcq^2 + a}$$

Denote $L = Dcq^2 + a$

Then

$$b = \frac{\frac{1}{c}L^2 + L(-2a\frac{a^3c+c-a}{c}) + a^2 + a^3c - a^3 - \frac{a^4c+ac-a^2}{c}}{L}$$

$$\frac{db}{dL} = 0 \iff a^2c + a^3c^2 - a^3c - a^4c - ac + a^2 = L^2$$