1 Proof

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\begin{aligned}
f(t) &= \frac{\int_0^a \sigma'_{zz}(t) 2\pi r \,\mathrm{d}r}{\pi a^2} \tag{1}\\
&= \frac{2}{a^2}\int_0^a \left[-p + C_{13}\left(\frac{\partial u}{\partial r} + \frac{u}{r} + C_{13}\varepsilon\right)\right] r \,\mathrm{d}r \tag{8}\\
u' &= -\frac{\varepsilon r'}{2}\left[1 - \frac{\left(C'_{11} + C'_{12} - 2C'_{13}\right)\frac{I_1\left[\sqrt{s}\right]}{\sqrt{s}}}{C'_{11} I_0[\sqrt{s}] - 2\frac{I_1\left[\sqrt{s}\right]}{\sqrt{s}}}\right] \tag{10}\\
p' &= \frac{C'_{11}\left(C'_{11} + C'_{12} - 2C'_{13}\right)}{2}\left[\frac{I_0[\sqrt{s} r'] - I_0[\sqrt{s}]}{C'_{11} I_0[\sqrt{s}] - 2\frac{I_1\left[\sqrt{s}\right]}{\sqrt{s}}}\right] \tag{11}
\end{aligned}
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\begin{aligned}
f(t) &= \frac{\int_0^a \sigma'_{zz}(t) 2\pi r \,\mathrm{d}r}{\pi a^2} \tag{2}\\
&= \frac{2}{a^2}\int_0^a \left[-p + C_{13}\left(\frac{\partial u}{\partial r} + \frac{u}{r} + C_{13}\varepsilon\right)\right] r \,\mathrm{d}r \tag{8}\\
u' &= -\frac{\varepsilon r'}{2}\left[1 - \frac{\left(C'_{11} + C'_{12} - 2C'_{13}\right)\frac{I_1\left[\sqrt{s}\right]}{\sqrt{s}}}{C'_{11} I_0[\sqrt{s}] - 2\frac{I_1\left[\sqrt{s}\right]}{\sqrt{s}}}\right] \tag{Cohen Eqn10}\\
&= -\frac{\varepsilon r'}{2} \qquad \textbf{if}_{\substack{\nu_{31}=0.5\ \textbf{so}\\ C'_{11}+C'_{12}-2C'_{13}=0}} \tag{3}\\
p' &= \frac{C'_{11}\left(C'_{11} + C'_{12} - 2C'_{13}\right)}{2}\left[\frac{I_0[\sqrt{s} r'] - I_0[\sqrt{s}]}{C'_{11} I_0[\sqrt{s}] - 2\frac{I_1\left[\sqrt{s}\right]}{\sqrt{s}}}\right] \tag{11}\\
&= 0 \qquad \textbf{if}_{\substack{\nu_{31}=0.5\ \textbf{so}\\ C'_{11}+C'_{12}-2C'_{13}=0}} \tag{4}
\end{aligned}
$$