

$$\begin{aligned}
\tilde{P} &= 40 \log \left| \frac{\tilde{\lambda}_{env}(r)}{\tilde{\lambda}_{liq}} e^{ik[env(r)-liq]} + 1 \right| + 40 \log |\tilde{\lambda}_{liq} e^{ik \cdot liq}| \\
&\quad - 40\kappa \log r + 20 \log G + 10 \log P_0 \\
&= 40 \log \left| \frac{\tilde{\lambda}_{env}(r)}{\tilde{\lambda}_{liq}} e^{ik[env(r)-liq]} + 1 \right| + 40 \log |\tilde{\lambda}_{liq}| \\
&\quad - 40\kappa \log r + 20 \log G + 10 \log P_0
\end{aligned} \tag{1}$$