

$$\times \left[\frac{1}{\epsilon'} - 1 \right] \tag{A7}$$

where N is the number of unit cells of the direct lattice,

$$\begin{aligned} \epsilon' = 1 + & \frac{\beta_{14}}{\{m_\alpha m_\beta C_{\alpha\beta}^{-1}\}^{\frac{1}{2}}} \\ & \times \left[\frac{1}{m_\gamma m_\delta C_{\gamma\delta}^{-1} \cdot I_3^{\frac{1}{3}}} - \frac{1}{\beta_{16}^2} \right] L(C_{\alpha\beta}^{-1}, I_3) \\ & + \frac{\beta_{15}}{m_\alpha m_\beta C_{\alpha\beta}^{-1} I_3^{\frac{1}{3}}} \end{aligned} \tag{A8}$$

and

$$L(C_{\alpha\beta}^{-1}, I_3) = \ln \left[\frac{\beta_{16} (m_\alpha m_\beta C_{\alpha\beta}^{-1})^{-\frac{1}{2}} \cdot I_3^{-\frac{1}{6}} + 1}{\beta_{16} (m_\alpha m_\beta C_{\alpha\beta}^{-1})^{-\frac{1}{2}} \cdot I_3^{-\frac{1}{6}} - 1} \right]. \tag{A9}$$

The $\beta_{13}, \beta_{14}, \beta_{15}$ and β_{16} are constants. These expressions involve $C_{\alpha\beta}^{-1}$ and I_3 repeatedly, terms which proliferate upon differentiation with respect to the deformation tensor $C_{\kappa\lambda}$. As a consequence, calculation of higher order derivatives of the band structure contribution with respect to arbitrary deformation becomes extremely tedious.

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