Mesh optimization

(Dated: February 10, 2025)

I. INTEGRALS

$$I_{ab} = -\frac{\sqrt{\pi}\Lambda \exp^{-\frac{(\theta_a-\theta_b)^2}{4\Lambda^2}} \left(erf\left(\frac{-2\beta+\theta_a+\theta_b}{2\Lambda}\right) - erf\left(\frac{2\beta+\theta_a+\theta_b}{2\Lambda}\right)\right)}{4\beta} \tag{1}$$

$$J_{ab} = \frac{1}{16\beta}\Lambda \exp^{-\frac{2\beta^2+{\theta_a}^2+{\theta_b}^2}{2\Lambda^2}} (\sqrt{\pi}\left(2\Lambda^2+(\theta_a-\theta_b)^2\right) \exp^{\frac{4\beta^2+(\theta_a+\theta_b)^2}{4\Lambda^2}} \left(erf\left(\frac{2\beta+\theta_a+\theta_b}{2\Lambda}\right) - erf\left(\frac{-2\beta+\theta_a+\theta_b}{2\Lambda}\right)\right) \tag{2}$$

$$-4\Lambda(\theta_a-3\theta_b)\sinh\left(\frac{\beta(\theta_a+\theta_b)}{\Lambda^2}\right) - 8\beta\Lambda\cosh\left(\frac{\beta(\theta_a+\theta_b)}{\Lambda^2}\right)) \tag{3}$$

$$K_{ab} = (1/(64\beta))\exp^{-((2\beta^2+\theta_a^2+\theta_b^2)/(2\Lambda^2))}\,\Lambda(-8\beta\Lambda(4\beta^2+6\Lambda^2+\theta_a^2+10\theta_a\theta_b+\theta_b^2)\cosh[(\beta(\theta_a+\theta_b))/\Lambda^2]+ \tag{4}$$

$$\exp^{(4\beta^2+(\theta_a+\theta_b)^2)/(4\Lambda^2)}\sqrt{\pi}(12\Lambda^4-4\Lambda^2(\theta_a-\theta_b)^2+(\theta_a-\theta_b)^4)(-Erf[(-2\beta+\theta_a+\theta_b)/(2\Lambda)]+Erf[(2\beta+\theta_a+\theta_b)/(2\Lambda)]) \tag{5}$$

$$-4\Lambda(\theta_a+\theta_b)(-12\beta^2-6\Lambda^2+\theta_a^2-6\theta_a\theta_b+\theta_b^2)\sinh[(\beta(\theta_a+\theta_b))/\Lambda^2]) \tag{6}$$