General Overview Behind Non-Ideal SQUID Python Program

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The governing equation

$$I = I_c \sin \Delta\varphi \tag{1}$$

The evolution of the phase difference

$$\Delta\varphi = \Delta\varphi_0 + 2\pi B * x \tag{2}$$

Such that B is the applied Magnetic Field, $\Delta\varphi_0$ is the initial phase difference, and x is the spatial distance relative to either of the ends of the SQUID

The approximation formula I used for the current of each Josephson Junction

$$\sum a_n dx \tag{3}$$

$$current = current + J_d \sin(\Delta\varphi_0 + 2\pi B * x)dx \tag{4}$$

J_d is the current density at that Junction
$\Delta\varphi_0$ = initial phase difference at that Junction
B = normalized magentic flux quanta
location = spatial location of the junction with respect to the ends of the SQUID

$$B = (2\lambda + d)\phi_d/\phi_0 \tag{5}$$

With units $(unit\ length)^{-1}$