# Josephson Junction from Lifshitz-Black Hole in Weyl Geometry

## Geometric Josephson junction

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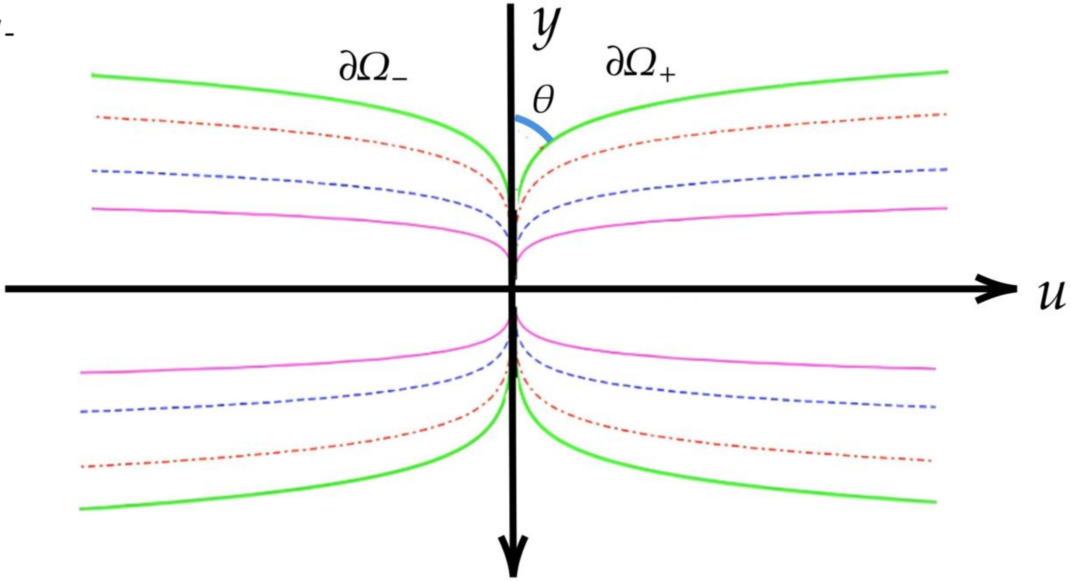


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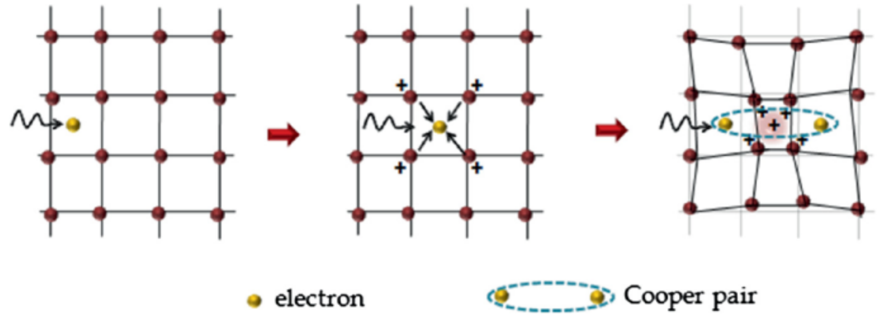
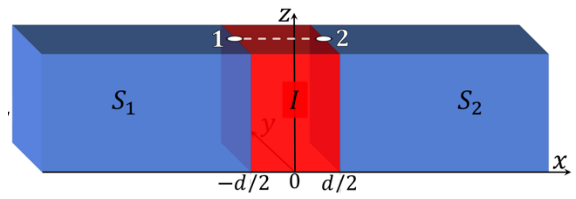
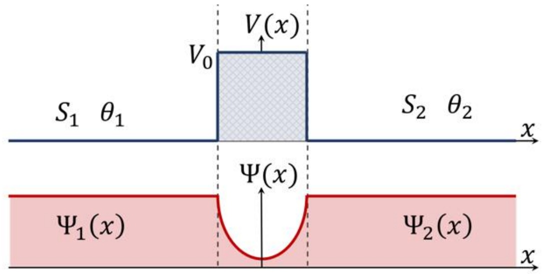
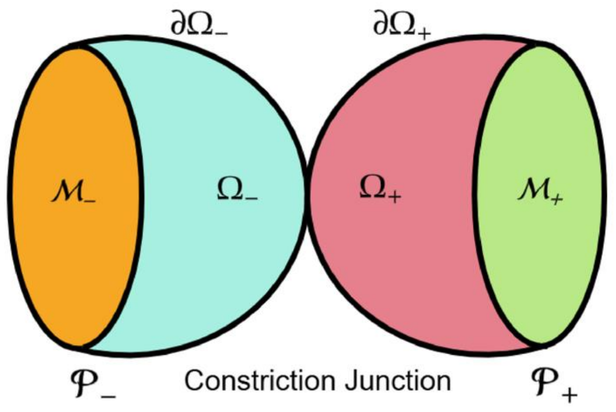
# Josephson Junction:




$$S = S_{\text{Profile}} + S^{\Omega}_{FF}$$

$$S^{\Omega} = \frac{1}{2}\kappa_{\mathrm{G}} \left( \int_{\Omega_+} + \int_{\Omega_-} \right) d^{D+1}x \sqrt{-g}\, \left(R - 2\Lambda\right)$$

$$S^{\Omega}_{FF} = \frac{1}{2}\kappa_{\mathrm{G}} \left( \int_{\Omega_+} + \int_{\Omega_-} \right) d^{D+1}\sqrt{-g} \left( -\frac{1}{4q^2} F^{\mu\nu}F_{\mu\nu} - \left(\partial_\mu \Psi - qA_\mu\right)^2 - \frac{1}{2}m^2\Psi^2 \right).$$

# What I would like to do next:

(1.) Modify Weyl geometry :

$$S^{\Omega} = \frac{1}{2}\kappa_{\mathrm{G}} \int d^{D+1}x \sqrt{-g}\,(R - 2\Lambda) \quad \longrightarrow \quad S^{\Omega}_{\mathbf{w}} = \int d^{d+1}x\,\sqrt{g}\,\left\{a_0 \hat{R}^2 + b_0 \hat{F}^2_{\mu\nu} + c_0 \hat{C}^2_{\mu\nu\rho\sigma} + d_0 \hat{G}\right\}$$

(2.) To study the Josephson junction, which is an anisotropic system.

By using the Lifshitz transformation:

$$t \to \lambda^z t, \qquad x_i \to \lambda x_i, \qquad z \neq 1\,.$$

# Thank You