Small and Fast Physics

Calculations in relativistic quantum field theory require management of infinities (regularization and renormalization)

$$\nabla A^\mu = J^\mu \xrightarrow[\text{choosing a gauge}]{\text{Invert by}} A^\mu = e^{ikx}...$$

Field eqs. Propagator

$\mathcal{L} = \text{simple}$

$+ A^\mu ...\text{perturbation}$

History

1940s Developed by Feynman, Tomonaga, Schwinger

Old masters uncomfortable (Feynman, Dirac)

Current Efforts

Shut up and calculate the most precise calcs in physics

My Effort

Nature uses all well-formed terms.

Use a Lagrangian's neighbors. $(\mathcal{L}, \vec{P}) = \frac{1}{2}(B^2 - E^2, 4\ \vec{E} \times \vec{B})$

Using the complete set, field equations can be inverted without choosing a gauge