

The reason why the potential in configuration space cannot simply be derived with Fourier transformation

For nuclear physics, the structure of the potential is highly complicated; thus, some of common methods in quantum mechanics cannot be applied.

In fact, the Fourier transformation of momentum space (q-space) is not possible because it generates divergence of the potential.

⇒ Therefore, the configuration-space representation of the finite range parts has to be obtained in the form of a continuous superposition of Yukawa function.