The "residual strong force" acting indirectly, transmits gluons that form part of the virtu
π and ρ mesons, which in turn, transmit the force between nucleons that hold the nucleus (beyond protium) together.
The residual strong force is weaker than the strong force that bind quarks together into protons and neutrons because it is mostly neutralised within them ~~exactly~~ in the same way that electromagnetic forces between neutral atoms (Van der Waals' forces) are much weaker than the electromagnetic forces that hold electrons in association with the nucleus forming the atoms.

Unlike the strong force, the residual strong force does diminish rapidly in strength with distance. The decrease is approximately as a negative exponential power of distance (Yukawa potential)

$$V_{Yukawa}(r) = -g^2 \frac{e^{-kmr}}{r}$$

The rapid decrease with distance of the attractive residual force and the less-rapid decrease of the repulsive electromagnetic force acting between protons within a nucleus causes the instability of larger atomic nuclei (atomic nº 782(lead))

Although the nuclear force is weaker than strong interaction itself, it is highly energetic: transitions produce gamma rays. The mass of nuclei is significantly different from the masses of the individual nucleons. This mass defect is due to the potential energy associated with the nuclear force. Differences between mass defect powers nuclear fusion and nuclear fission.