

Do elementary particles with a non-zero spin truly rotate?

Well, what do physicists mean by "elementary"?

Not further divisible into smaller parts;

which means elementary particles have NO details at all, hence ~~nothing~~ that could be qualified as a Prime Meridian¹.

**It is not correct to say they are actually pirouetting,
& it is also incorrect to say they don't.**

Rotation of elementary particles is a meaningless concept.

They do not revolve and they do not not revolve.
They both don't and don'tn't & they neither don't nor don'tn't.

One should not try to answer senseless/silly questions!

¹ Maybe you like to read: <http://henk-reints.nl/HR-Greenwich-Meridian.pdf>

Intrinsic rotation cannot and does not exist at all.

Spin–spin–orbit resonance (like the Pluto–Charon system) exists only at the macroscopic level; meridianless objects cannot rotate face-to-face.

Ultimately, the elementary particles constituting Pluto & Charon do not pirouette and neither do any atoms, hence there is **NO** intrinsic rotation in this system, nor anywhere else in the cosmos.

Circular motion (e.g. an orbit) consists of two perpendicular harmonic oscillations with a 90° phase difference.

Macroscopic rotation is considered absolute, but it merely is a combination of linear oscillations.