Three-Dimensional Spinning of Macro Bodies (Fragment of Fragments)

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Abstract: In this paper in accordance with pseudo-Heracletean dynamics on double surface three-dimensional spinning is proposed as an explanation for the practically unit spin g-factor of ordinary physical bodies.

Keywords: Single- and three-dimensional spinning, pseudo-Heracletean dynamics on double surface, inverse spin and spin g-factor, path-translation and rotation-translation ratio, Compton wavelength, electron, proton, neutron, muon and tau.

1. THEORETICAL BACKGROUND

According to pseudo-Heracletean dynamics on double surface [1] the particle inverse spin, denoted \(\text{spin}^{-1}\), is defined as the path-translation ratio \(\frac{s}{n}\) on the particle’s circumference concluded curved motion [2]:

\[
\text{spin}^{-1} = \frac{s}{n} = 2 - \frac{1}{\sqrt{1 + \frac{\pi^2}{n^2}}}. \tag{1}
\]

Here \(\text{spin}^{-1}\) is dimensionless number in the range \((1,2)\) and path \(s\), translation \(n\) and rotation \(\pi\) is expressed in Compton wavelengths of the spinning particle [2].

Further, according to the same dynamics [1] the next relation between \(\text{spin}^{-1}\) and spin g-factor, denoted \(g_f\), is proposed [2]:

\[
\text{spin}^{-1} = \frac{2}{g_f} + 1. \tag{2}
\]

Let us also recall the spin g-factor to mass-radius product relation [3]:

\[
\frac{m_{\text{rc}}}{n} \approx \frac{1}{\left(\frac{1}{\left(\frac{1}{2} + \frac{1}{g_{\text{factor}}}\right)}\right)^2} \times \left(\frac{1}{2} + \frac{1}{g_{\text{factor}}}\right). \tag{3}
\]

The equation (3) defines \(g_{\text{factor}}\) in the range \((1, \infty)\) and consequently the equation (2) defines \(\text{spin}^{-1}\) in the range \((1,3)\). The known as well as predicted values of spin g-factor and \(\text{spin}^{-1}\) of elementary particles such as electron, proton, neutron, muon and tau [2] satisfy the equation (1). But contrarily the value of \(\text{spin}^{-1} \approx 3\) belonging to chemical elements and all other heavier and greater physical bodies [3] does not do it. Such value of \(\text{spin}^{-1}\) is calculated inserting the unit value of spin g-factor of ordinary macro bodies [3], i.e. \(g_f = \left(\frac{3}{4} \frac{h}{m_{\text{rc}}}ight)^2 + 1 \approx 1\), in the equation (2). The found discrepancy: \(\text{spin}^{-1} > 2\) demands some explanation.

2. SINGLE- AND MULTI-DIMENSIONAL SPINNING

The value \(\text{spin}^{-1} > 2\) can be explained by the fact that macro bodies execute their spin in more than one dimension. For the spinning in \(a\) dimensions the next formula for \(\text{spin}^{-1}\) is expressed:
\[ \text{spin}^{-1}(a) = a \times \left( 2 - \frac{1}{\sqrt{1 + \frac{n^2}{n^2}}} \right). \] (4)

At single-dimensional spinning where \( a = 1 \) the original formula for \( \text{spin}^{-1} \) provided on only one double surface (1) is given again:

\[ \text{spin}^{-1}(a = 1) = 2 - \frac{1}{\sqrt{1 + \frac{n^2}{n^2}}} \] (5)

For macro bodies spinning around in three dimensions \( (a = 3) \) the next approximate relation is expressed:

\[ \text{spin}^{-1}(a = 3) \approx 2 + \frac{1}{\sqrt{1 + \frac{n^2}{n^2}}} \] (6)

Indeed, since macro bodies possess a negligible rotation-translation ratio \( \frac{n}{n} \approx 0 \) holds:

\[
\frac{2 + \frac{1}{\sqrt{1 + \frac{n^2}{n^2}}}}{2 - \frac{1}{\sqrt{1 + \frac{n^2}{n^2}}} \approx 2 + 1 - 1 = 3.}
\] (7)

Then using the equation (6) the next \( \text{spin}^{-1} \) is calculated:

\[ \text{spin}^{-1}(a = 3) \approx 3. \] (8)

And applying the equation (2) approximately unit spin g-factor \( g_f \approx 1 \) of ordinary physical bodies is confirmed:

\[ \text{spin}^{-1}(g_f \approx 1) \approx 3. \] (9)

### 3. Conclusions

Three-dimensional spinning of macro bodies is difficult to measure since the observer spins in three dimensions, too. But nevertheless respecting pseudo-Heracletean dynamics on double surface the concerned spinning can explain the proposed practically unit spin g-factor of all ordinary physical bodies: chemical elements as well as chemically or physically composed heavier and larger macro bodies.

### 4. The Addendum

Following the just now presented theory the spinning in one dimension is another option for enough heavy or large physical bodies with \( \frac{mrc}{h} \approx \infty \). And the spinning in two dimensions is possible for very light or small physical bodies with \( \frac{mrc}{h} \approx 0 \). Both conclusions are given with the help of the equations (2), (4) at the negligible rotation-translation ratio \( \frac{n}{n} \approx 0 \) and applying the spin g-factor to mass-radius product relation (3), [3]:

\[ \text{spin}^{-1}(a = 1) \approx 1 \rightarrow \text{spin}^{-1}(g_f \approx \infty) \approx 1 \rightarrow \frac{mrc}{h} (g_f \approx \infty) \approx \infty. \] (10)

And:

\[ \text{spin}^{-1}(a = 2) \approx 2 \rightarrow \text{spin}^{-1}(g_f \approx 2) \approx 2 \rightarrow \frac{mrc}{h} (g_f \approx 2) \approx 0. \] (11)

On the other hand the spinning in more than three dimensions possesses \( \text{spin}^{-1} > 3 \). So it cannot be justified by the spin g-factor to mass-radius relation (3), [3] being defined only in the \( \text{spin}^{-1} \) range \( (1,3) \). Of course as long as imaginary values of mass or size is not the subject of interest. Thus:

\[ \text{spin}^{-1}(a > 3) \rightarrow 3 \rightarrow \text{spin}^{-1}(g_f < 1) > 3 \rightarrow \frac{mrc}{h} (g_f < 1) \notin \mathbb{R}. \] (12)
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The editor’s commitment to open accessed knowledge - while giving creative freedom to the researcher - is well recognised.

DEDICATION
This fragment is dedicated to Janez Krstnik (John the Baptist) - my wife’s and my own patron saint.

REFERENCES

AUTHOR’S BIOGRAPHY
Janez Špringer, is only a curious man passionately collecting fragments in the field of science. God bless the field and be merciful with the collector.