Physics of 5000 years Cycle

5000 year cycle is probably the most controversial point of Godly Knowledge, and sounds incredibly small to a person trained in modern sciences. While, people in past have come to conclusion of possibility of universe repeating in identical cycles, nowhere, a scientific or rational attempt to estimate the size of time cycle has been made. Among the modern physicists, Poincare, championed the cause of an eternal cosmos repeating itself in identical cycles, however, he could only establish what is now called asymptotic recurrence. What this means is that given a system of finite number of particles, in a finite volume, the positions and velocities of all particles will be observed to repeat, if one waits for a sufficiently long time. This long time, could be even infinite - hence the name asymptotic (tending towards infinity) recurrence. Time period for recurrence is called Poincare period. An attempt to apply this idea to the whole universe, given the present state of knowledge of dynamical laws governing particle motions and interactions, yields astronomical high figures, of the order of billions of years at least. However, this cyclic time picture is not in complete accordance with Godly Knowledge - because the recurrence period in Godly Knowledge is mere 5000 years. Therefore it is of great interest to Brahmins, if a method could be found which would yield the magic figure of 5000 years. In this article, I outline, an approach, which appears to yield results comparable to Godly Knowledge.

Recurrence of all events in a finite time, means that the original configuration of universe is restored. This recurrence in finite time, is different from Poincare's asymptotic recurrence, which is based upon conventional dynamics. The right approach to solving the finite recurrence problem is, to re-work the behavior of particles, adopting the finite recurrence idea as a hypothesis or postulate. This yields the following dynamical laws for finite recurrence, in time period T , on which one would have to base one's equations of motions, and particle interactions -

1.   All particles return to their original position, with original velocity, acceleration etc., at the end of time cycle. This law is fairly straight forward. It also implies,
     (a) All particle paths are closed,
     (b) Time taken by all particle to complete their closed paths is equal to recurrence time.

2.   Total energy, momentum change of a particle over a single time cycle is zero. That's how, the particle would have the initial momentum, energy etc., at the end of time cycle.

3.   Instantaneous change in energy, momentum etc., of a particle, during a collision or interaction is negative of the change undergone, throughout the rest of the time cycle. That's how the total change in the complete time cycle would be zero. This is an important constraint in cyclic time, but is missing in linear time. Thus these laws appear to yield a basis on which a new physics compatible with Godly Knowledge can be developed.

Next I consider issue of size of time cycle. I consider the special case of closed universe - i.e., in which particles do not keep moving indefinitely into space, but circle around the universe and come back to their starting point. The idea here is that if size of time cycle in N years, circumference of universe should be N light years. Since, light is conventionally regarded as the fastest material particle, it is required that circle of light in a single time cycle

should have the size 5000 light years. This therefore should be the circumference of the universe, in which matter exists. In turn, this figure gives a universe radius of a few hundred (about 850 light years) light years. Dirac, one of the founding fathers of quantum mechanics, had formulated what is now known as Dirac's large number hypothesis. This hypothesis equated ratio of universe radius and electron radius, with ratio of electromagnetic attraction between electron and proton, and gravitational attraction between electron and proton. One gets very large numbers when one takes these rations. For example, universe (the biggest physical object) is much, much bigger than electron (smallest physical object), and hence the ratio is very high. Similarly, electromagnetic attraction between electron and proton is much, much stronger, than gravitational attraction between these two particles. These large numbers turn out to be of the order 10 to power 40 (i.e., 1 followed by 40 zeros). While these numbers are not exactly equal, and cannot even be worked out precisely, only order of magnitude estimates are currently known. Dirac, used electron's Compton wavelength in his equation, as a measure of size of electron, and obtained a figure of few billion light years for universe size. However, electron radius has recently been determined by so called Penning trap experiments, and yields a figure of 10 to power minus 20 centimeters. When, one puts this figure in the equation for Dirac's large number hypothesis, one gets universe radius of few hundred light years, and universe circumference of a few thousand light years. If one wants a universe circumference of exactly 5000 light years, the required value of electron radius is 1.9 x 10**(-19) cm, which is of order comparable with the value determined using Penning trap experiments.

These considerations suggest that the figure 5000 years for size of time cycle may have strong scientific grounding, which needs to be properly investigated. Main considerations to be established are the Dirac's large number hypothesis (DLNH) - which as such does not have a rigorous foundation, but is only an empirical observation, and the relation between size of time cycle and size of universe. I am optimistic, that such a formulation is shortly forthcoming,