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Condensed Light, Quantum Black Holes and L-CDM Cosmology: Experimentally Suggested and Tested Unified Approach to Dark Matter, Dark Energy, Cosmogenesis and Two-Stage Inflation

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Over the last decade, experimental physics and observational cosmology have made many fundamental discoveries: gravitational waves (LIGO), Higgs bosons (LHC), photon condensates with rest energy and rest mass trapped in "mirror cavities" (Bonn University).
Through these remarkable results, Nature suggests that at pressures and temperatures well above the Higgs field level (246 GeV), only the 2-d and 3-d photon condensates trapped in their own "gravitational cavities" should be unique sources of gravity during the early Universe. Moreover, we conclude that the real "prima materia" at the "beginning of the times" was a 3-dimensional Planck photonic condensate as "explosive" accompanied by Planck fluctuations as "fuse".
Our approach is based on the laws that govern birth and death, accretion, quantum particles emission and gravitational waves radiation of quantum black holes, which are taken as spherical 2-d photon condensates trapped in their own gravitational fields.
According to our calculations, relic gravitational waves with Planck energies Ep and Ep/2 make up 93.38% of the dark energy in the Universe. As we can see, S. Weinberg was absolutely right: only the energy of Hot Bing Bang causes the universal expansion process.
Using this unified approach, we can calculate that at the end of the epoch of baryogenesis, when stage I of inflation ends, the rest energies of black holes (dark matter) and energy of gravitational waves (dark energy) are 28.68% and 66.42%, respectively. But 6÷8 billion years ago, the II stage of inflation began. Now, accordingly to "Planck-2018" data, we find the 26.63% and 68.47%, respectively. Comparison with stage I clearly shows that the increase in dark energy is caused by a decrease in the energy associated with dark matter. This leads to the unambiguous conclusion that stage II of inflation is provided by binary coalescences of black holes.

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