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Dark matter and dark energy as quantum entities

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We derive a relativistic model of matter-wave duality. The model turns out to be qualitatively similar to the well-known de Broglie-Bohm's model. It prescribes that the total energy of a body in a state of motion relative to an observer, is carried cooperatively by the body corpuscular matter, and its dual wave. At very low velocities ($\beta \ll 1$), the wave component diminishes, and the body total energy becomes equal to the Newtonian Kinetic energy. At very high velocities ($\beta \rightarrow 1$), the kinetic energy of the body corpuscular matter diminishes, and the bulk of the body energy is carried by its dual wave. Our model is insensitive to the magnitude of the moving body. This crucially important characteristic is utilized to construct a quantum cosmology, which suggests that dark matter and dark energy are, respectively, quantum matter, and dual wave energy at cosmic scales.

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