Abstract - Black holes acting as dark matter have been predicted, e.g., via a duality theory in (Feria 2011, Proc. IEEE Int'l Conf. on SMC, Alaska, USA) and via observations in (Kashlinsky 2016, AJL). Here a thermote, a novel thermal element simplifying the finding of a medium's entropy, emerges as a dark matter candidate from primordial black holes with a mass in range of axion's, a leading candidate. The thermote energy, e_T, is defined as the average thermal energy contributed to a particle's motion by the medium's degrees of freedom (DoF) and is thus given by $e_T=N_{DoF}k_BT/2$ where N_{DoF} is the DoF number (e.g., $N_{DoF}=2$ for a black-hole since only in its event-horizon particle motions can occur) and $k_BT/2$ is the thermal energy contributed by each degree of freedom (k_B is the Boltzmann constant and T is temperature). The entropy S of a spherical homogeneous medium is then simply stated as $S=(k_B/2)E/e_T$ where $E=Mc_2$ is the medium's rest-energy, with M its point-mass and c the speed of light, and $e_T=N_{DoF}k_BT/2$ is the thermote's *kinetic-energy*. This simple equation naturally surfaced from a rest/kinetic or retention/motion mass-energy duality theory where, e.g., black-holes and vacuums form together such a duality with black holes offering the least resistance to mass-energy rest, or retention, and vacuums offering the least resistance to mass-energy kinetics, or motions. In turn, this duality theory has roots in the universal cybernetics duality principle (UCDP) stating "synergistic physical and mathematical dualities arise in efficient system designs" (Feria 2014, http://dx.doi.org/10.1117/2.1201407.005429, SPIE Newsroom). Our thermote based entropy finding method is applicable to spherical homogeneous mediums such as black-holes, photon-gases, and flexible-phase (Feria 2016, Proc. IEEE Int'l Conf. on Smart Cloud, Columbia University, NY, USA), where the thermote of a primordial black hole, with $N_{DoF}=2$ and a CMB radiation temperature of $T=2.725$ kelvin, emerges as a sensible dark matter candidade with a mass of 235.14 μeV which is within the predicted range of 50 μeV to 1,500 μeV for the axion after inflation (Borsanyi, *et al.* 2016, Nature, <ahref="http://dx.doi.org/10.1038/nature20115">http://dx.doi.org/10.1038/nature20115).