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## Two groups of oppositely charged particles as building blocks for the start of the universe

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A cold start of the universe is proposed where two spherical agglomerates collide. Each agglomerate contains the same amount of densely-packed, basic particles of Planck dimensions. One agglomerate contains “*neg*” particles with a charge of one-third of the charge of an electron and the other “*pos*” particles with a charge of one-third of the charge of a positron. The first particles formed upon collision are very high-energy, static photons consisting of a *neg* and a *pos*. By colliding a small part of the photons with 1-3 *neg*'s or 1-3 *pos*'s, proto quarks and leptons are formed resulting in the formation of equal amounts of neutral matter and antimatter. The symmetry of proto quark combinations proves a good indicator for the stability of hadrons. In the model photons are dumbbell shaped spinning particles that are essential for the formation of fields. The vector sum of the rotational and the translational velocities of a photon are almost equal to the velocity of light in vacuum. Even the highest energy photons in cosmic gamma rays have a translational velocity very close to this velocity. This theory explains why lower energy photons travel faster than higher energy photons as observed for distant objects in space. Both mass and energy are manifestations of the polarisation of photons around bodies which explains their relation.

### Biography

M J Van Der Burgt holds an MSc degree in Chemical Engineering of Delft University (Chemical Engineering). After a year in Purdue, he joined Shell where he worked for over 30 years in hydrogen processes and strategy. Since his retirement he worked for over 20 years as an independent consultant in the field of power generation and related subjects. He has lectured around the world including some seminars at Princeton University and wrote a standard work on the conversion of hydrocarbon fuels into synthesis gas and power. In 1953, he was awarded the DOW Chemical Energy prize and became a Knight in the order of Orange Nassau. It is his life long interest with physics and astronomy that has resulted in various manuscripts.

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