CRYSTALTYPE MODEL OF THE UNIVERSE.

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In the large scale our Universe usually is treated as a homogeneous Friedmann-Hubble expanding medium containing discrete points (clusters, superclusters of galaxies, Ambartsumyan associations supposed invisible part constructed of hypothetical particles, also cosmic strings). But the ideas about some discreteness already were expressed in the hierarchical model of Lambert-Charlier, later considered by Mandelbrot in his fractal approach, also proposed in discrete-space picture of Ambartsumyan-Ivanenko (1930) (in various versions generalized by Snyder,Tamm, Caldirola, Kadyshevski etc.). The recently observed latticetype distribution of the Metagalaxy matter observed recently suggests on our opinion to investigate the Universe crystaltype structure, somehow analoguous to atomic quasicrystals.

Not concerning here the origin of observed Galactic "lattice" we propose the Delaunay sets (D-sets) for description of this "lattice" [Galiulin R.V. Delone systems. Sov.Phys.Crystallogr., 1980, 25, 5, p.517-520] D-sets obey two characteristics: "discretness", i.e. the existance of a minimal distance between two points of the system and "covering" expressing that the distance from an arbitrary base to the nearest point of the D-set is less that a certain fixed value. Effective distribution of points in D-sets is realized on arbitrary base of the Riemann space. The ideal crystals and quasicrystals are the particular types of D-sets.

Among many strongly mathematically elaborated consequences, one obtains the conclusion that value of the relation between discretness and covering radii does not exceeds 2. Such relation is satisfyed in the Universe "lattice" where the values (may be of course not exactly precise) of discretness (of the order 130 mill. light years) and "empty" parts (few matter) (of the order 125 mill. light years). We noted that as in the most stable atomic structures this relation contains too in the interval between 1 and 2. Not entering in other nontrivial results of D-sets eg. the representation of them by Wigner-Seitz-type cells we point out very important and not apriori expected consequence that D-systems based on the spaces of constant curvature (Euclidean, Lobachevsky or Spherical type) have very small different content types. One of this type is so-called Zone D-sets (Z-sets, well-known quasicrystals belong to them [Galiulin R.V. Zone D-sets// 12-th European crystallogr congress: abstrats, M., 1989, p.21; Danzer L. Local-global theorm for Delone graphs// Space groups and its modern divelopment: Abstracts, International conference, Leningrad, 1991, p.47]). In Z-sets any multitude of v ectors of a fixed dimension is built from a finite number classes (zones), constructed from parallel vectors. May be such regularisation could represent a reasonable approximation to the understanding the cosmological "lattice". Then we shall see that D-sets would represent a new example of a powerful mathematical formalism describing some fundamental proporties both in region of atomic structures (ideal crystals, quasicrystals, fractals) and in the large scales of the observed Universe. May be the space in big and small volumes not change essentially its main properties.

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