986.420 Min-max Limit Hierarchy of Pre-time-size Allspace-fillers
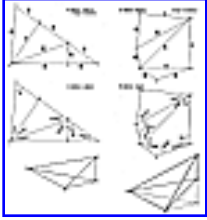
986.421   Of all the allspace-filling module components, the simplest are the three- quanta-module Mites, consisting of two A Quanta Modules (one A positive and one A negative) and of one B Quanta Module (which may be either positive or negative). Thus a Mite can be positive or negative, depending on the sign of its B Quanta Module. The Mites are not only themselves tetrahedra (the minimum-sided polyhedra), but they are also the simplest minimum-limit case of allspace-filling polyhedra of Universe, since they consist of two energy-conserving A Quanta Modules and one equivolume energy- dispersing B Quanta Module. The energy conservation of the A Quanta Module is provided geometrically by its tetrahedral form: four different right-triangled facets being all foldable from one unique flat-out whole triangle (Fig. 913.01), which triangle's boundary edges have reflective properties that bounce around internally to those triangles to produce similar smaller triangles: Ergo, the A Quanta Module acts as a local energy holder. The B Quanta Module is not foldable out of one whole triangle, and energies bouncing around within it tend to escape. The B Quanta Module acts as a local energy dispenser. (See Fig. 986.421.)
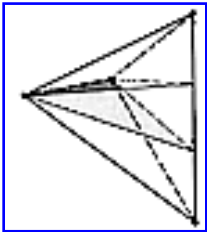
986.422   **Mite:** The simplest allspace-filler is the Mite (see Secs. 953 and 986.418). The positive Mite consists of 1 A + mod, 1 A - mod, and B + mod; the negative Mite consists of 1 A + mod, 1A - mod, and B-mod. Sum-total number of modules...3.

986.423   Around the four corners of the tetrahedral Mites are three right triangles. Two of them are similar right triangles with differently angled acute corners, and the third right triangle around that omni-right-angled corner is an isosceles.

986.424   The tetrahedral Mites may be inter-edge-bonded to fill allspace, but only because the spaces between them are inadvertent capturings of Mite-shaped vacancies. Positive Mite inter-edge assemblies produce negative Mite vacancies, and vice versa. The minimum-limit case always provides inadvertent entry into the Negative Universe. Sum- total number of modules is...1½

986.425   Mites can also fill allspace by inter-face-bonding one positive and one negative Mite to produce the Syte. This trivalent inter-face-bonding requires twice as many Mites as are needed for bivalent inter-edge-bonding. Total number of modules is...3
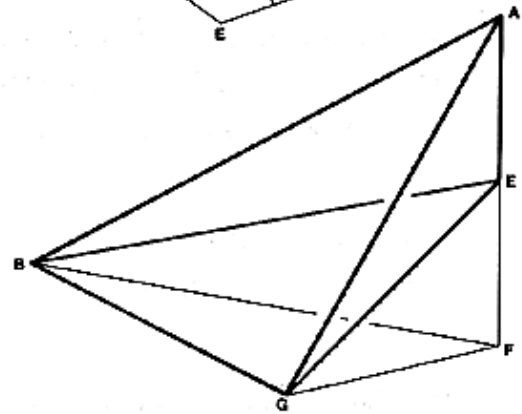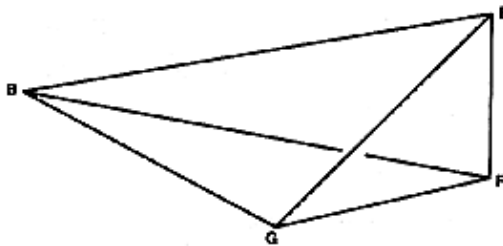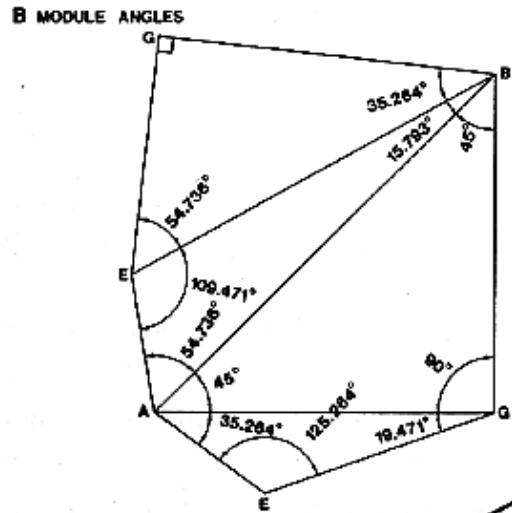
A MODULE LENGTHS
a = edge of tetrahedron

B MODULE LENGTHS
a = edge of octahedron
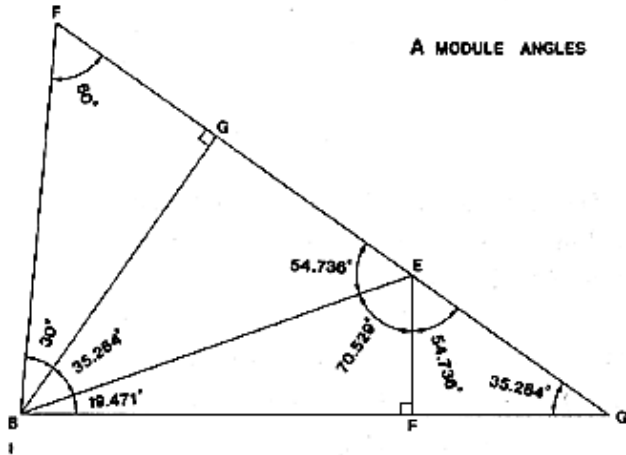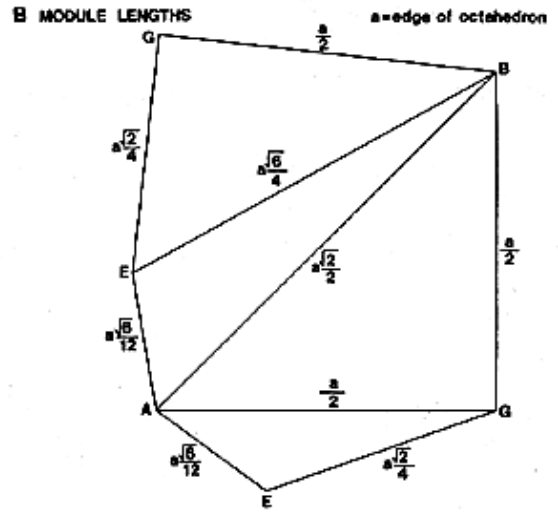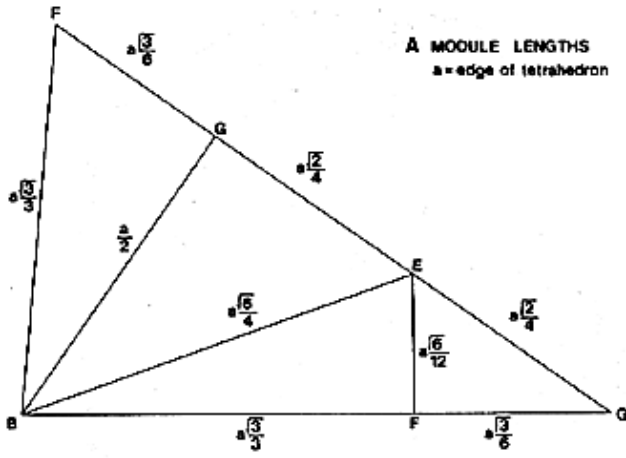
A MODULE ANGLES

B MODULE ANGLES

Fig. 986.421 A and B Quanta Modules. The top drawings present plane nets for the modules with edge lengths of the A Modules ratioed to the tetra edge and edge lengths of the B Modules ratioed to the octa edge. The middle drawings illustrate the angles and foldability. The bottom drawings show the folded assembly and their relation to each other. Tetra edge=octa edge. (Compare Figs. 913.01 and 916.01.)
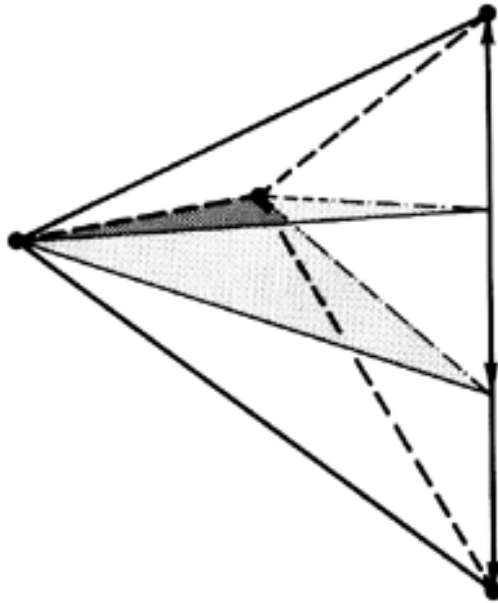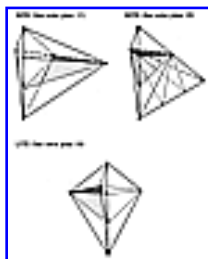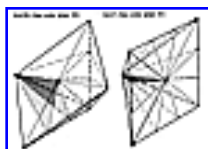
MITE (See color plate 17.)

986.426 **Syte:** The next simplest allspace-filler is the Syte. (See Sec. 953.40.) Each Syte consists of one of only three alternate ways of face-bonding two Mites to form an allspace-filling polyhedron, consisting of 2 A + mods, 2 A - mods, 1 B + mod, and 1 B - mod. Sum-total number of modules...6

986.427   Two of the three alternate ways of combining two Mites produce tetrahedral Sytes of one kind:
BITE (See color plate 17), RITE (See color plate 19)
while the third alternate method of combining will produce a hexahedral Syte.
LITE (See color plate 18)

986.428 **Kite:** The next simplest allspace-filler is the Kite. Kites are pentahedra or half-octahedra or half-Couplers, each consisting of one of the only two alternate ways of combining two Sytes to produce two differently shaped pentahedra, the Kate and the Kat, each of 4 A + mods, 4 A - mods, 2 B + mods, and 2 B-mods. Sum-total number of modules...12

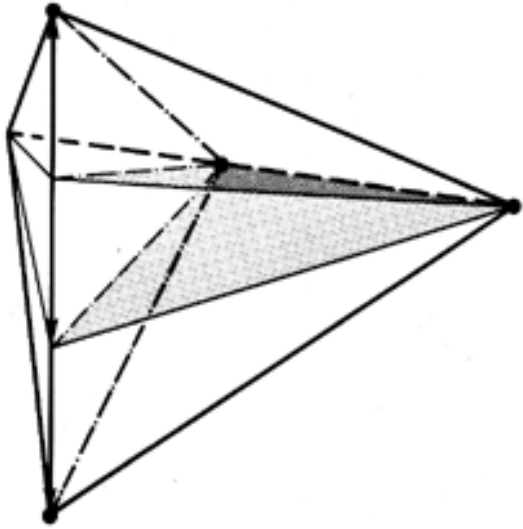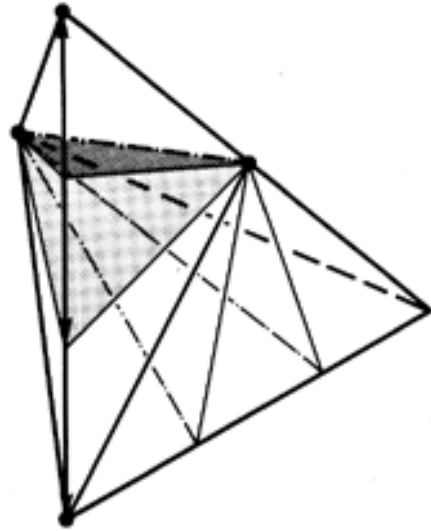986.429   Two Sytes combine to produce two Kites as KATE (See color plate 20) KAT (See color plate 21)

BITE (See color plate 17)   RITE (See color plate 19)

LITE (See color plate 18)
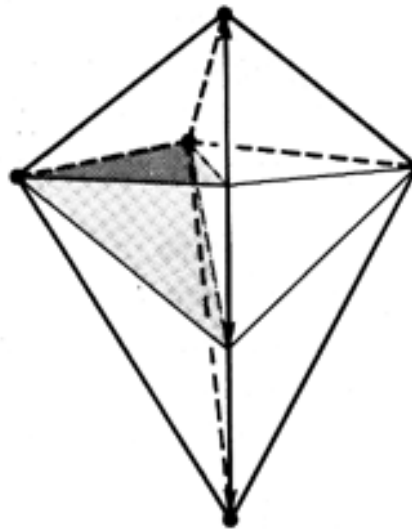
Fig. 986.427 Bite, Rite, Lite.
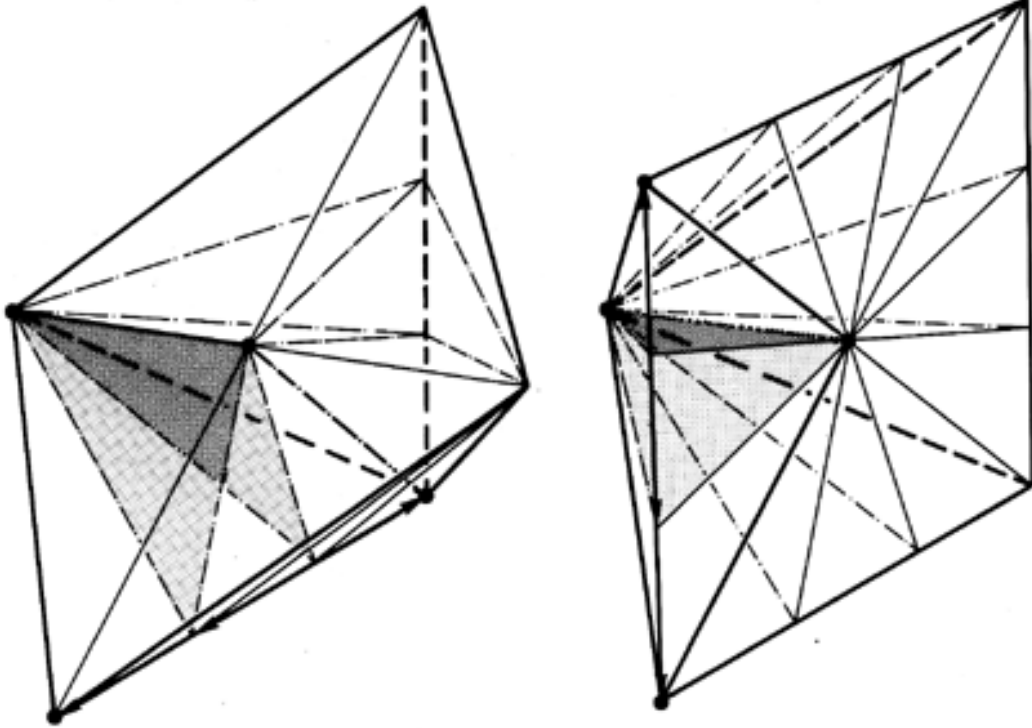
KATE (See color plate 20)　　KAT (See color plate 21)

Fig. 986.429 Kate, Kat.