Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

8x8 and 10x10 Hyperspace Representations of SU(3) and 10-fold Point-Symmetry Group of Quasicrystals[1] ALEXANDER ANIMALU[2], Emeritus Professor of Physics — In order to further elucidate the unexpected 10-fold point-symmetry group structure of quasi-crystals for which the 2011 Nobel Prize in chemistry was awarded to Daniel Shechtman, we explore a correspondence principle between the number of (projective) geometric elements (points[vertices] + lines[edges] + planes[faces]) of primitive cells of periodic or quasi-periodic arrangement of hard or deformable spheres in 3-dimensional space of crystallography and elements of quantum field theory of particle physics [points (particles, lines (particles, planes (currents] and hence construct 8x8 =64 = 28+36 = 26 + 38, and 10x10 =100= 64 + 36 = 74 + 26 hyperspace representations of the SU(3) symmetry of elementary particle physics and quasicrystals of condensed matter (solid state) physics respectively, As a result, we predict the Cabibbo-like angles in leptonic decay of hadrons in elementary-particle physics and the observed 10-fold symmetric diffraction pattern of quasi-crystals.

[1]Supported by International Centre for Basic Research, Abuja, Nigeria.
[2]Dept. of Physics & Astronomy, University of Nigeria, Nsukka, Nigeria

Alexander Animalu
Emeritus Professor of Physics

Date submitted: 23 Nov 2011 Electronic form version 1.4