Platonization of atomic and nuclear physics could be said to be the theme of this work. The construction of electron configurations of atoms and proton and neutron configurations of atomic physics have considerable analogies and the spectra have essentially the same structure in the standard model.

In the TGD framework, the nuclear string model proposes that nuclei form nuclear strings. By quantum classical correspondence energy shells decomposing to subshells containing states with a given angular momentum should have geometric correlates and should correspond to discretization of 2-D surfaces, sphere is a good guess. The first guess is that a nuclear string connecting nucleons is associated with a Platonic solid having nucleons at its vertices.

Therefore Platonic solids as analogs of solid states lattices could provide the discretized space-time and momentum space correlates for energy shells. The nuclear string connecting nucleons would correspond to a Hamilton cycle, which connects the V vertices of the Platonic tessellation and decomposes the edges of the Platonic tessellation to V edges of the cycle and $F-2$ free edges in its complement. The ends of the edges of the Hamilton cycle could contain neutrons and the middle points of the free edges could contain protons (or vice versa in the case of icosahedron). This assignment is suggested by the repulsive Coulomb interaction and explains neutron surplus as well as neutron halos. An alternative, fully symmetric proposal is that Platonic solid and its dual are present. Dual has F vertices at the centers of faces the Platonic solid and V edges connecting them.

Starting from the angular momentum structure of the Periodic Table, one ends up with a detailed model. For low enough angular momentum $l \leq 5$ the states of $j = l \pm 1/2$ multiplets would correspond to different Platonic tessellations for the $F-2$ option. For the F option one would have $l \leq 3$. The increase of h_{eff} increasing the unit of angular momentum would make possible Platonization of higher angular momenta. The twistor lift of TGD explains why fermions with opposite spins correspond to different points of the Platonic solid identified as discretizations of the twistor sphere of discretized momentum twistor space of M^4. Could this construction generalize to arbitrary Lie groups using the analogs of Platonic solids defined by the discrete subspaces of the coset spaces of the group and its Cartan algebra?

The application to nuclear physics, motivated by the tritium beta decay anomaly, leads to a detailed formulation of a model of nucleus in terms of monopole flux tubes. Flux tubes are identified as electropions with mass 1 MeV and the model predicts new excitations in the 10 keV range defined by the mass difference between charged and neutral electropion. The model provides a quantitative explanation for the tritium anomaly. Various objections against Platonization lead to a rather radical prediction. There is a holography mapping the nuclear states to generalized atomic states such that protons correspond to electron shells and neutrons to neutrino shells having size scale of 10^{-8} meters, which is fundamental in biology. This model generalizes to a model of atoms and makes several killer predictions distinguishing the model from the standard view. The lego model for the construction of nuclear states works also for hadrons.