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On the origin of families and their mass matrices with the approach unifying spins and charges, prediction for the fourth family and the dark matter family

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The approach unifying all the internal degrees of freedom—the spins and all the charges into only (two kinds of) the spin—is offering a new way of understanding the properties of quarks and leptons, that is their charges and their couplings to the gauge fields, the appearance of families and their mass matrices. The (simple) starting Lagrange density for spinors in d =1+13, which carry nothing but two kinds of spins-the Dirac kind and the additional one, commuting with the Dirac one (no charges) and interact with only the gravitational field through vielbeins and two kinds of spin connection fields—the gauge fields of the two kinds of the Clifford algebra objects—manifests in d=1+3 the properties of fermions and bosons as postulated by the Standard model of the electroweak and colour interactions, with the Yukawa couplings included. In this talk a way of spontaneous breaking of the starting symmetry which leads to the properties of the observed fermions is presented and rough predictions for not yet measured fermions is made, with the dark matter candidates included. The prediction is made that the fourth family will possibly be measured at LHC. The estimation is made that a cluster of the fifth family could be measured at new experiments with NaI.

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