FLOWS ON EDGES OF SIMPLEX

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$(m-1)$-dimensional simplex is a convex envelope of orts

$$\Delta_{m-1} := conv\{\mathbf{e}_1, \mathbf{e}_2, \ldots, \mathbf{e}_m\},$$

where $\mathbf{e}_1 = (1, 0, \ldots, 0)$, $\mathbf{e}_2 = (0, 1, 0, \ldots, 0)$,...,$\mathbf{e}_m = (0, 0, \ldots, 1)$. An impulse which flows on the edge, from one to the other vertex of a simplex, divides at the other vertex into $m-2$ edge sub-flows. Process continues. Obtains an infinite $(m-2)$-ary tree, which is enveloped over the simplex i.e. complete graph. Matrix representation and distribution od excitations of vertices is considered. Fibonacci like recurrence relation defines the propagation of flow - a kind of genetic evolution process producing codes.

Theorem. *The sequence* $(S_m^{(n)})$ *of vectors of scintillations of vertices of a simplex* Δ_{m-1} *is characterized by*

$$S_m^{(0)} = \left(\frac{1}{m-2}, 0, \ldots, 0\right), \qquad S_m^{(1)} = (0, 1, 0, \ldots, 0), \qquad S_m^{(2)} = (0, 0, 1, \ldots, 1),$$

and the recurrence

$$S_m^{(n+1)} = (m-3)S_m^{(n)} + (m-2)^2 S_m^{(n-2)}, \qquad n \geq 3.$$

[1] Bjelica, M. *Matrix representation of tetrahedral flows*, In: Proceeding of Mathematical and Informational Technologies MIT 2011, 27.-31.08. Vrnjačka Banja, Serbia, 31.08.-05.09.2011, Budva, Montenegro, pp. 40-43.