Chromotopic functors

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In English, the prefix chromo- relates to colour. It is evident in the word chromosome, and we will here employ the words chromological, chromotopic object, chromotopic functor, and the whole subject and its results could be named Chromotopia. The term is derived from the branching structures of the colour force in the strong interactions, where there are three colours interlinked between themselves.

In this work we deal with the extraction and assembly of chromotopic objects. A chromotopic object is a generalisation of a local object described by a Euler characteristic. As examples the local object described by $(x - 2)^3$ is a cube, by $(x - 1)^2$ is a torus and by $(x - 1)(x - 2)$ is a cylinder. If we expand out $(x - 2)^3 = x^3 - 6x^2 + 12x - 8$, we see the number of volumes of the cube is given by the coefficient of x^3, minus the number of faces by the coefficient of x^2, the number of edges by the coefficient of x, and the number of vertices by minus the scalar coefficient. The generalisation of a local object to rings is given by the product $\Pi_i(x - a_i)$, where the a_i may be more general than the numbers ±1 or ±2.

The chromotopic object has its implementation as a superexponential object

$$\&(i = 1 \text{ to } n)\Uparrow_i\lambda_i,$$

where & indicates a superproduct over superexponential operations on hyperintricate ladder numbers, the subscripted $\Uparrow_i$ indicates the ith superexponential operation, which can be ${}^n\Uparrow$ or $\Uparrow^n$, and λ_i is a hyperintricate ladder number. We do not assume the hyperintricate ladder numbers are associative.

That is, the local objects described by a_i may be matrices, including in the hyperintricate representation itemised in [Ad14a]. The entries of these matrices will be ladder numbers, which possess infinitesimal and infinite rungs as described in [Ad13]. The algebra of the local chromotopic object belongs to a superexponential algebra rather than a ring, itemised in [Ad14b], and in both the case of an exponential operation $\uparrow$ and the general superexponential operator $\Uparrow$, left nested as ${}^n\Uparrow$ or right nested as $\Uparrow^n$, it obeys, including for matrices, the nonstandard algebra D1 first described in [Ad14a], and extended in [Ad14b].

We may form the equaliser of the superexponential object with the initial object 0, or the terminal object 1.

Corresponding to the local object, we may assemble a global object as follows. We extract from a number of possibly distinct chromotopical objects, a subset of these objects. We then assemble these objects by identifying them in ways that will be specified, to produce a global object. This corresponds with cutting and gluing in cobordism theory. Morphisms of these global assemblies will be called chromotopic functors.