Encoding Discrete Quantum Algebras in a Hierarchy of Binary Words

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Abstract. It is shown how to endow a hierarchy of sets of binary patterns with the structure of an abstract, normed C*-algebra. In the course we also recover an intermediate connection with the words of a Dyck language and Tempereley-Lieb algebras for which we also find that an effective arithmetic code is possible albeit of greater complexity. We also discuss possible applications associated with signal theory and waveform engineering on possible ways to embed discrete computational structures in an analog continuum substrate.