GENERALIZED KUPERBERG INVARIANTS OF 3-MANIFOLDS

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Abstract: In the 90s, Kuperberg defined a scalar invariant of 3-manifolds from each finite-dimensional involutory Hopf algebra over a field. The construction is based on the presentation of 3-manifolds by Heegaard diagrams and involves tensor products of the structure tensors of the Hopf algebra. These tensor products are then contracted using integrals of the Hopf algebra to obtain the scalar invariant. We generalize this construction by contracting the tensor products with other morphisms. Examples of such morphisms are derived from involutory Hopf algebras in symmetric monoidal categories.