

1106-05-1327      **Michael Krul\***, 400 The Fenway, Boston, MA 02115, and **Lubos Thoma**, 5 Lippitt Rd,  
Kingston, RI 02881. *Algebraic Characterizations of Hypergraph Colorings.*

For a uniform hypergraph, we construct/present coloring scheme ideals in a polynomial ring over real numbers which characterize when the hypergraph admits a proper  $k$ -coloring with given restrictions on the *color patterns* on the edges. Using the coloring scheme ideals we provide full algebraic characterizations for various hypergraph coloring problems, including: list colorings, conflict-free colorings, strong colorings, and edge colorings. We also examine partial colorings and their effect on computing Gröbner bases for the polynomial ideals mention above.

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