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*The Clar Structures of a Fullerene*

A fullerene is a 3-regular plane graph consisting of only pentagonal and hexagonal faces. The *Fries* and *Clar* number of a fullerene are two related parameters, and the Clar number is less understood. We introduce the *Clar Structure* of a fullerene, a decomposition designed to compute the Clar number for classes of fullerenes. We also settle an open question with a counterexample: we prove that the Clar and Fries number of a fullerene cannot always be obtained with the same Kekulé structure.