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The evolution of the structure of ABC-minimal trees

The atom-bond connectivity (ABC) index is a degree-based molecular descriptor that found diverse chemical applications. Characterizing trees with minimum ABC-index is the main open problem in this area. In this paper, we describe the exact structure of ABC-minimal trees with sufficiently many vertices and we show how their structure evolves when the number of vertices grows. We show that their radius is at most 5 and all but at most $O(1)$ vertices have degree 1, 2, 4, or 53. This is a joint work with MohammadBagher Ahmadi and Bojan Mohar.