Taxonomy of Graphs of Order 10

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The taxonomy (basic structural characteristics and relationships) of the simple graphs of small order is of fundamental importance in graph theory. This joint work with Peter Adams (Univ. Queensland, Australia) and James MacDougall (Univ. Newcastle, Australia) reports on the taxonomy of the 12,005,168 simple graphs of order 10. Topics discussed include their degree sequences, particularly multiplicity of realizations; number and order of components; smallest cycles; sentinels (first realizations of degree sequences); graph poset structure; and edge symmetry. This significantly extends our earlier work on the 288,266 simple graphs of orders up to 9 [Congressus Num., 166 (2004), 63-81, 83-95].

Key words: simple graph, graph poset, degree sequence.