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Anton Betten* (betten@math.colostate.edu), Department of Mathematics, Colorado State University, Fort Collins, CO 80523. *Breaking Symmetry In the Computer Age.*

The old technique of breaking symmetry is popular in proofs (We may assume...). Today, we can use computers to examine many cases in very little time. Using symmetry means that we examine only the cases that are distinct. This is useful for classifying discrete objects by computer (which is a difficult problem because it involves isomorphism testing). Beyond breaking the symmetry, we use techniques from graph theory. Specifically, we use rainbow cliques in colored graphs to make the search feasible. Exotic objects like BLT-sets, unitals in projective planes, translation planes, dual hyperovals and others can all be classified with this method. Summarizing, we obtain efficient algorithms to deal with the isomorphism problem. (Received September 10, 2012)