

5.9 OPEN PROBLEMS

1. Is there a relationship between the maximal size of an independent family, and the maximal sizes of independent families consisting of points only, or of lines only? Notice that in the examples in Figures 5.1.8 and 5.1.9 the first is strictly greater than the latter two.
2. If C is a 4-configuration and H a Hamiltonian multilateral in C , then each line is determined by two vertices of H and passes through two other vertices of C . Is it possible to obtain a new Hamiltonian multilateral H^* of C by using such pairs of points of C as vertices of a multilateral? If so, can this happen in a k -astral 4-configuration, or even in an astral 4-configuration?
3. It is conceivable that *every* connected configuration (n_k) can be presented as a family of mutually inscribed/circumscribed multilaterals; this naturally includes Hamiltonian multilaterals. Either a counterexample, or an affirmation (at least for $k = 3$ or 4) would be very interesting.
4. Is there any relationship between the maximal size of an independent family in a configuration C , and the dimension of C ?
5. Are all movable k -astral 4-configurations 2-dimensional?