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Takuro Abe* (abe.takuro.4c@kyoto-u.ac.jp), Department of Mechanical Engineering and, Science, Kyoto University, Yoshida Honmachi, Sakyo-ku, Kyoto, Kyoto 6068501, Japan. *Chambers and freeness of line arrangements.*

Connected components of the complement of a real line arrangement are called chambers. We give a lower bound of the number of chambers under certain conditions in terms of free (multi)arrangements and its exponents. This result is obtained from an interesting relation between the geometry and combinatorics of affine line arrangements and the algebra of central line multiarrangements. As an application we give a sufficient condition for a central plane arrangement to be free in terms of characteristic polynomials over any fields. (Received February 01, 2011)