Abstract

The existence of geometric designs on a path-connected space was proved by P. D. Seymour and T. Zaslavsky. In this paper, under a necessary condition, we establish the existence of rational designs (geometric designs consisting of rational points) on an algebraically path-connected space. Consequently, we show that there exist rational designs on the unit interval and unit balls, and there exist spherical designs consisting of points whose coordinates are rational numbers except possibly the first coordinate.