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Mou He Fang Gai: A legend over thousands years

The study of Mou He Fang Gai (also known as the bicylinder) dated back to Archimedes, Hui Liu, Chongzhi Zu, Geng Zu etc. In particular, the old Chinese mathematicians Chongzhi Zu and Geng Zu took use of Mou He Fang Gai to find the explicit formula of the volume of 3-dimensional balls. This is one of the milestone results in the (Chinese) mathematical history.

In this talk, I will briefly explain how to use Mou He Fang Gai to find the formula for 3-dimensional ball. Motivated by the construction of Mou He Fang Gai, I will also talk about how to develop a new polarity (and hence a new family of convex bodies) for sets in the n-dimensional space. This new polarity naturally defines many useful notions parallel to those for convex bodies. In particular, I will explain how to get a new Blaschke-Santalo type inequality.