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**Peter Quast** and **Takashi Sakai\*** ([sakai-t@tmu.ac.jp](mailto:sakai-t@tmu.ac.jp)), Minami-Osawa, Hachioji-shi, Tokyo 192-0397, Japan. *Natural  $\Gamma$ -symmetric structures on  $R$ -spaces*. Preliminary report.

The notion of  $\Gamma$ -symmetric spaces was introduced by Lutz in 1981 generalizing  $k$ -symmetric spaces. In this talk, we consider  $\Gamma$ -symmetric structures on some  $R$ -spaces using  $\Gamma$ -symmetric triples introduced by Goze and Remm. We give a characterization in terms of root systems and classification of  $R$ -spaces that admit a certain natural  $\Gamma$ -symmetric structure, where  $\Gamma = (\mathbb{Z}_2)^m$ . For  $\Gamma = \mathbb{Z}_2$  we recover the symmetric  $R$ -spaces.

In 1988, Chan and Nagano studied antipodal sets of compact symmetric spaces. The notion of antipodal sets can be extended to  $\Gamma$ -symmetric spaces. We study antipodal sets of  $R$ -spaces with respect to their natural  $\Gamma$ -symmetric structures, and show that a maximal antipodal set is given as an orbit of the Weyl group. That is a generalization of a result on maximal antipodal sets of symmetric  $R$ -spaces due to Tanaka and Tasaki. (Received September 16, 2019)