Notes: generalised symmetries & related topics

大阪大学大学院理学研究科物理学専攻　大和 寛尚

Contents

1   Defining higher-form symmetries

Most part of this section are adopted from the reviews below.

1. 日高 義将，高次対称性入門

2. 日高 義将，対称性の自発的破れ入門

1.1   Starting from the conventional symmetries

Let us start by introducing another standpoint of seeing the conventional symmetries. We start with an example of a free fermionic system. The action of the system is given as shown below.

$$S[\psi] = \int_M \mathrm{d}^d x \, \bar{\psi}(x)(\gamma^\mu \partial_\mu - m)\psi(x). \tag{1.1}$$

Here, $\psi(x)$ is a spinor field, which is a