

## **Killing tensor of five dimensional Melvin's spacetime**

### **ABSTRACT**

Killing tensors are generalizations of Killing vectors as objects that reflect the symmetries of spacetime. With recent interest in higher-dimensional spacetimes, construction of Killing tensors from lower dimensional ones may be useful. Our focus lies in the (4+1) dimensional Melvin's spacetime which describes a magnetic universe with a cylindrical symmetry. We constructed the Killing vectors and Killing tensors in 5-dimensional Melvin's spacetime. The Killing tensors are a linear combination of scalar times a metric and respective symmetric product of Killing vectors similar to those found by Garfinkle and Glass for the 4-dimensional case. It is relatively easy to write down Killing tensors of a particular spacetime admitting both commuting and hypersurface orthogonal Killing vectors.

**Keyword:** Killing vectors; Killing tensors; Melvin's spacetime