

## Topological Structure and Topological Tensor Current of Gauss-Bonnet-Chern Theorem

DUAN Yi-Shi,<sup>1</sup> WU Shao-Feng,<sup>1</sup> and ZHANG Peng-Ming<sup>2</sup>

<sup>1</sup> Institute of Theoretical Physics, Lanzhou University, Lanzhou 730000, China

<sup>2</sup> Department of Mathematics, Lanzhou University, Lanzhou 730000, China

(Received: 2005-9-16; Revised: )

**Abstract:** We offer an intrinsic theoretical framework to reveal the inner relationships among three theories for Euler characteristic number, including Gauss-Bonnet-Chern theorem, Hopf-Poincaré theorem and Morse theory. Moreover, we consider the Gauss-Bonnet-Chern (GBC) form imbedded in arbitrary higher-dimensional manifold, which suggests a Hodge dual tensor current. We show the brane structure inherent in the GBC tensor current and obtain the generalized Nambu action for the multi branes with quantized topological charge.

PACS: 02.40.-k, 11.40.-q, 11.15.-q, 11.25.-w

Key words: Gauss-Bonnet-Chern theorem, topological tensor current, branes

[\[Full text: PDF\]](#)

Close