

**GEOMETRICAL PROPERTIES OF GENERALIZED  
QUASI-CONFORMAL CURVATURE TENSOR**

**P. Kumar Maurya, A. Shukla, B. Prasad\* and R. Pratap Singh Yadav\***

Faculty of Mathematics and Statistical Science,  
Shri Ram Swaroop Memorial University,  
Barabanki - 225003, Uttar Pradesh, INDIA

E-mail : homestudy90@gmail.com, abhiramshukla.maths@srmu.ac.in

\*Department of Mathematics,  
S. M. M. Town P. G. College,  
Ballia - 277001, Uttar Pradesh, INDIA

E-mail : bhagwatprasad2010@rediffmail.com, rana\_2181@rediffmail.com

**(Received: May 22, 2025 Accepted: Mar. 18, 2026 Published: Apr. 30, 2026)**

**Abstract:** This paper examines the generalized quasi-conformal curvature  $\mathcal{G}$ , which generalizes the concept of conformal curvature tensor  $\mathcal{C}$ , quasi-conformal curvature tensor  $\tilde{\mathcal{C}}$ , projective curvature tensor  $\mathcal{P}$ , pseudo projective curvature tensor  $\tilde{\mathcal{P}}$ , and pseudo  $W_2$ -curvature tensor  $\tilde{\mathcal{W}}_2$ . Initially, we acquire some geometrical features. Subsequently, we examine pseudo generalized conformal symmetric manifolds. Divergence-free generalized quasi-conformal curvature tensor is derived from the Gray's decomposition. Additionally, we also examine Einstein  $(PGS)_n$  manifolds. A study of generalized quasi-conformal has been conducted as the four-dimensional spacetime of general relativity  $\widetilde{GR}$ . Ultimately, we examine a non-trivial Lorentzian metric of  $(PGS)_4$ .

**Keywords and Phrases:** Pseudo symmetric, perfect fluid, Einstein's field equation, Quasi-conformal curvature tensor  $\tilde{\mathcal{C}}$ , pseudo projective curvature tensor  $\tilde{\mathcal{P}}$ , conformal curvature tensor  $\mathcal{C}$ , projective curvature tensor  $\mathcal{P}$ , concircular curvature tensor  $\mathcal{L}$ , generalized quasi conformal curvature tensor  $\mathcal{G}$ , Gray's decomposition.

**2020 Mathematics Subject Classification:** 53C25, 53D15.