PROBABILITY
AND
MATHEMATICAL STATISTICS
Vol. 42, Fasc. 2 (2022), pp. 177–194
Published online 7.10.2022
doi:10.37190/0208-4147.00060

GENERALIZATIONS OF THE FOURTH MOMENT THEOREM

BY

NOBUAKI NAGANUMA* (KUMAMOTO)

Abstract. Azmoodeh et al. established a criterion regarding convergence of the *second* and *other* even moments of random variables in a Wiener chaos with fixed order guaranteeing the central convergence of the random variables. This was a major step in studies of the fourth moment theorem. In this paper, we provide further generalizations of the fourth moment theorem by building on their ideas. More precisely, further criteria implying central convergence are provided: (i) the convergence of the *fourth* and *any other* even moment, (ii) the convergence of the *sixth* and *some other* even moments.

2020 Mathematics Subject Classification: Primary 60F05; Secondary 33C45, 60H07.

Key words and phrases: the fourth moment theorem, Nualart–Peccati criterion, central convergence, Wiener chaos.

THE FULL TEXT IS AVAILABLE HERE

* This work was supported by JSPS KAKENHI Grant Number 17K14202.