

Stein's Method of Exchangeable Pairs with Application to the Curie-Weiss Model

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Let (W, W') be an exchangeable pair. Assume that $E(W - W'|W) = g(W) + r(W)$, where $g(W)$ is a dominated term while $r(W)$ is negligible. Let $G(t) = \int_0^t g(s)ds$ and define $p(t) = c_1 e^{-c_0 G(t)}$, where c_0 is a properly chosen constant and $c_1 = 1 / \int_{-\infty}^{\infty} p(t)dt$. Let Y be a random variable with the probability density function p . In this talk we shall prove that W converges to Y in distribution under certain regular conditions. A Berry-Esseen type bound is also given. An application to the Curie-Weiss model will be discussed. The talk is based on a joint work with Sourav Chatterjee.