Estimation of Trigonometric Moments for Circular Distribution of MA(p) Type by Using Binary Series

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Abstract. Directional statistics have received a great deal of interest in recent years, and a variety of distributions on the circle have been proposed. In this paper, we propose circular distributions of a moving average model of order p type which includes the cardioid distribution, and discuss estimation of trigonometric moments based on binary series. We give an explicit form of the root n consistent estimator based on clipped series, which enables us to construct an efficient estimator by the Newton–Raphson iterative method. We also show a robustness of the proposed estimator when the probability density function is contaminated with a noise term.