

**Chen, May-Ru** (National Changhua University of Education, Taiwan)  
and **Ching-Zong Wei** (Academia Sinica, Taiwan)

*A New Urn Model*

**Abstract:** In this paper, we propose a new urn model. A single urn contains  $b$  black balls and  $w$  white balls. For each time, we randomly draw  $m$  balls and note their colors, say,  $k$  black balls and  $m - k$  white balls. Return the drawn balls with additional  $ck$  black balls and  $c(m - k)$  white balls. Repeat the procedure  $n$  times and denote by  $X_n$  the fraction of black balls after the  $n$ th drawing. To investigate the asymptotic properties of  $X_n$ , we first perform some computational studies. Then we show that  $\{X_n\}$  forms a martingale, which converges a.s. to a random variable  $X$ . The distribution of  $X$  is then shown to be absolutely continuous.