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**Vassil Y Yorgov\*** (vyorgov@uncfsu.edu), Department of Math & Computer Science,  
Fayetteville State University, 1200 Murchison Rd, Fayetteville, NC 28301. *A Structural Result on  
Circulant Weighing Matrices.*

We give a new structural theorem for circulant weighing matrices of prime power weight. Then we apply this theorem to prove non existence of circulant weighing matrices in some previously open cases. Particularly we prove nonexistence of such matrices of order 273 and weight 25 or 121. (Received August 28, 2006)