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**Elizabeth D Russell\*** ([elizabeth.russell@usma.edu](mailto:elizabeth.russell@usma.edu)), Department of Mathematical Science,  
Building 601, West Point, NY 10996. *Perturbations in the Quadratic Family with Multiple Poles.*

We consider the quadratic family of complex maps given by  $q_c(z) = z^2 + c$  where  $c$  is chosen so that the critical point, 0, is periodic of period  $N$ . Then we introduce a singular perturbation by adding one pole to each point along the cycle. When  $c = -1$  the Julia set is the well known basilica and the perturbed map is given by  $f_\lambda(z) = z^2 - 1 + \lambda/(z^{d_0}(z+1)^{d_1})$ . We will show that if  $\lambda$  is sufficiently small and the order of the poles satisfies a certain arithmetic condition, then the Julia set consists of the union of homeomorphic copies of the unperturbed Julia set, countably many Cantor sets of concentric closed curves, and Cantor sets of point components that accumulate on them. (Received September 21, 2011)