1067-Z1-443 **Jinglong Ye*** (jy79@msstate.edu), 27 O Wallace Circle, Starkville, MS 39759, and **EunKyoung Lee** and **Ratnasingham Shivaji**. *Positive Solutions for Infinite Semipositone Problems with Falling Zeros.*

We consider the positive solutions to the singular problem

$$\begin{cases} -\Delta u = au - f(u) - \frac{c}{u^\alpha} & \text{in } \Omega \\ \quad u = 0 & \text{on } \partial\Omega \end{cases} \tag{P}$$

where $0 < \alpha < 1$, $a > 0$ and $c > 0$ are constants, Ω is a bounded domain with smooth boundary and $f : [0, \infty) \to \mathbb{R}$ is a continuous function. We assume that there exist $M > 0$, $A > 0$, $p > 1$ such that $au - M \leq f(u) \leq Au^p$, for all $u \in [0, \infty)$. A simple example of f satisfying these assumptions is $f(u) = u^p$ for any $p > 1$. We use the method of sub-supersolutions to prove the existence of a positive solution of (P) when $a > \frac{2\lambda_1}{1+\alpha}$ and c is small. Here λ_1 is the first eigenvalue of operator $-\Delta$ with Dirichlet boundary conditions. We also extend our result to classes of infinite semipositone systems. (Received September 13, 2010)