1124-35-144 **Sun-Sig Byun** (byun@snu.ac.kr) and **Eunkyung Ko*** (ekko1115@unist.ac.kr). *Global $C^{1,\alpha}$ regularity and existence of multiple positive solutions for a singular $p(x)-$Laplacian equation.*

In this talk, we discuss positive solutions of the singular $p(x)-$Laplacian problem:

$$\begin{cases} -\mathrm{div}(|\nabla u|^{p(x)-2}\nabla u) = \frac{\lambda}{u^{\beta(x)}} + u^{q(x)}, & \text{in } \Omega, \\ u > 0, & \text{in } \Omega, \\ u = 0, & \text{on } \partial\Omega, \end{cases}$$

where Ω is bounded domain in $\mathbb{R}^N$, $N \geq 2$, with smooth boundary $\partial\Omega$, $\lambda > 0$ is a parameter, $\beta \in C^1(\bar{\Omega})$ with $0 < \beta(x) < 1$, $p \in C^1(\bar{\Omega}), q \in C(\bar{\Omega})$ with $p(x) > 1$ and $p(x) - 1 \leq q(x) < p^*(x) - 1$ for $x \in \bar{\Omega}$ where $p^*(x) = \frac{Np(x)}{N-p(x)}$ for $p(x) < N$ and $p^*(x) = \infty$ for $p(x) \geq N$. We prove the existence of multiple positive solutions by establishing the global $C^{1,\alpha}$ regularity of weak solutions and the strong comparison principle for the singular $p(x)$-Laplacian problem. (Received September 06, 2016)