2014학년 1학기

수학전공 Colloquium

◆ 제 목 :	**Leray's inequality in multi-connected domains.**
◆ 연 사 :	**Hideo Kozono (Waseda)**
◆ 초 록 :	Consider the stationary Navier-Stokes equations in a bounded domain $\Omega \subset R^n$ whose boundary $\partial\Omega$ consists of $L+1$ disjoint closed C^∞-surfaces $\Gamma_0, \Gamma_1, \cdots, \Gamma_L$ with $\Gamma_1, \cdots, \Gamma_L$ inside of Γ_0. The Leray inequality of the given boundary data β on $\partial\Omega$ plays an important role for the existence of solutions. It is known that if the flux $\gamma_i \equiv \int_{\Gamma_i} \beta \cdot \nu dS = 0$ on Γ_i(ν: the unit outer normal to Γ_i) is zero for each $i = 0, 1, \cdots, L$, then the Leray inequality holds. We prove that if there exists a sphere S in Ω separating $\partial\Omega$ in such a way that $\Gamma_1, \cdots, \Gamma_k$, 1 5 k 5 L are contained in S and that $\Gamma_{k+1}, \cdots, \Gamma_L$ are in the outside of S, then the Leray inequality necessarily implies that $\gamma_1 + \cdots + \gamma_k = 0$. In particular, suppose that for each each $i = 1, \cdots, L$ there exists a sphere S_i in Ω such that S_i contains only one Γ_i. Then the Leray inequality holds if and only if $\gamma_0 = \gamma_1 = \cdots = \gamma_L = 0$.
◆ 일 시 :	**4월 8일(화) 오후 5시**
◆ 장 소 :	**5동 102**