Seminars on Mathematical Fluid Mechanics in OCU

Date：February 19 (Tue.), 2019, 15:00-17:10
Place：Big Seminar Room (E408), Department of Mathematics, Osaka City University

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15:00 – 16:00:
Kyudong Choi (UNIST)

Title:
On the growth of the support of positive vorticity for 2D Euler equation in an infinite cylinder

Abstract:
We consider the incompressible 2D Euler equation in an infinite cylinder $R \times T$ in the case when the initial vorticity is non-negative, bounded, and compactly supported. We study $d(t)$, the diameter of the support of vorticity, and prove that it allows the following bound: $d(t) \leq Ct^{1/3}log^2t$ when t is large. This is joint work with S. Denisov.

16:10-17:10:
Noboru Chikami (Osaka University)

Title:
Well-posedness and time-decay estimates of CNSK

Abstract:
We consider the compressible Navier-Stokes-Korteweg system describing the dynamics of a liquid-vapor mixture with diffuse interphase. The global solutions are established under linear stability conditions in critical Besov spaces. In particular, the sound speed may be greater than or equal to zero. By fully exploiting the parabolic property of the linearized system for all frequencies, we see that there is no loss of derivative usually induced by the pressure for the standard isentropic compressible Navier-Stokes system. This enables us to apply Banach's fixed point theorem to show the existence of global solution. Furthermore, we obtain the optimal decay rates of the global solutions.