Dr. Lian will present a new moment of fluid (MOF) method to construct interface in multiphase flow simulations. The MOF method is an extension of the popular volume of fluid method. The MOF method takes into account of not only the volume fraction of the liquid but the centroid of the liquid. Since the method does not rely on information from neighboring points during the interface construction, it can maintain a sharp interface. The Navier-Stokes equations are solved using a pressure projection method with block structured adaptive grid refinement. Using this method, Dr. Lian and his research team have studied droplet impact on both hydrophobic and hydrophilic surfaces, droplet impact on thin film, droplet/droplet collision, and impact of supercooled large droplet on surfaces, gas-liquid jet flow, and interaction between shock wave and air bubbles.

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