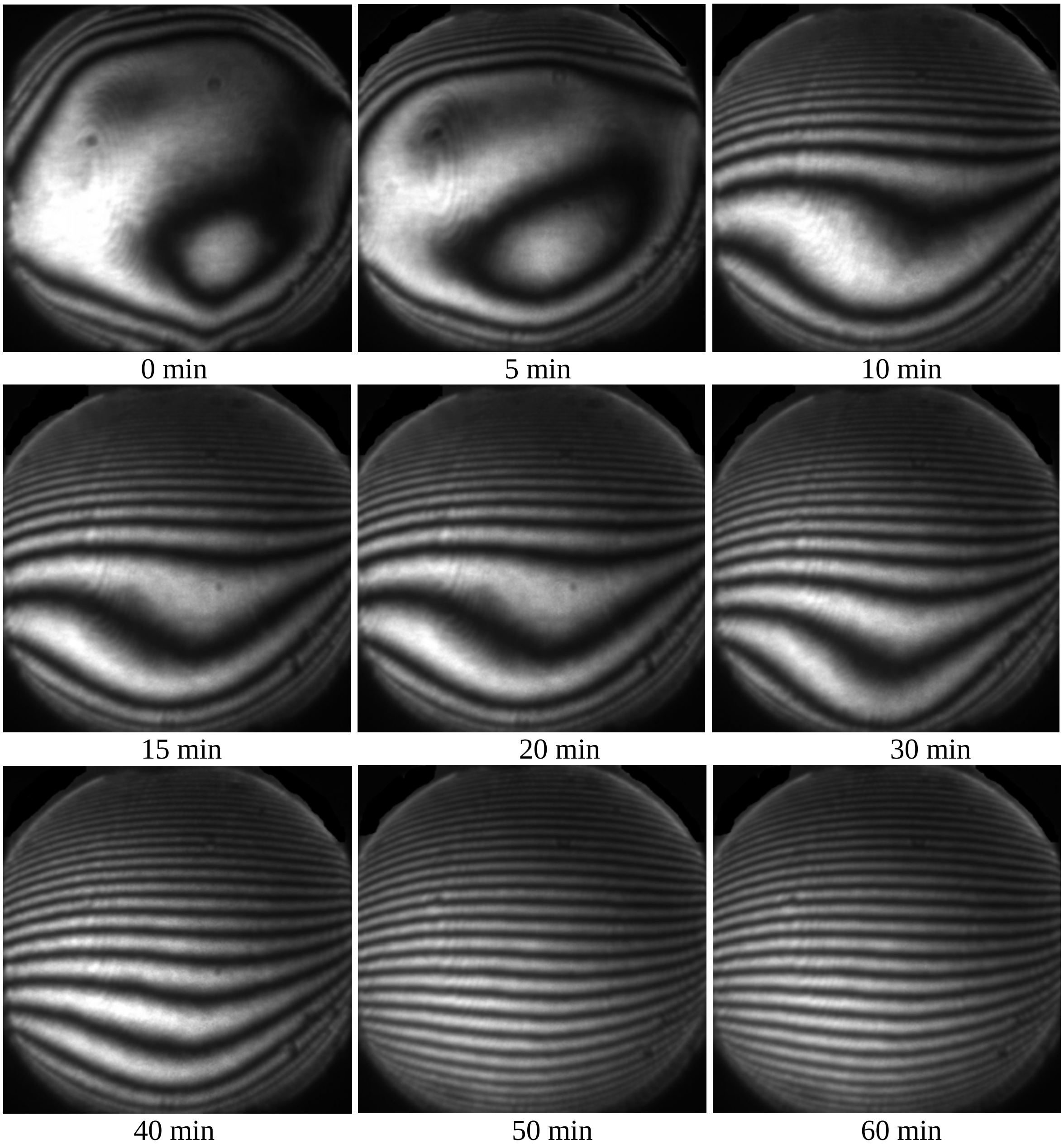

Figure 1: Heat conduction in a differentially heated layer of water with the top surface maintained at 23^{o}C and the lower surface at 18^{o}C. The thermal field is images using a Mach-Zehnder interferometer in the infinite fringe setting. Images adapted from M.Tech. dissertation of Vishnu Singh, Indian Institute of Technology, Kanpur (2009).

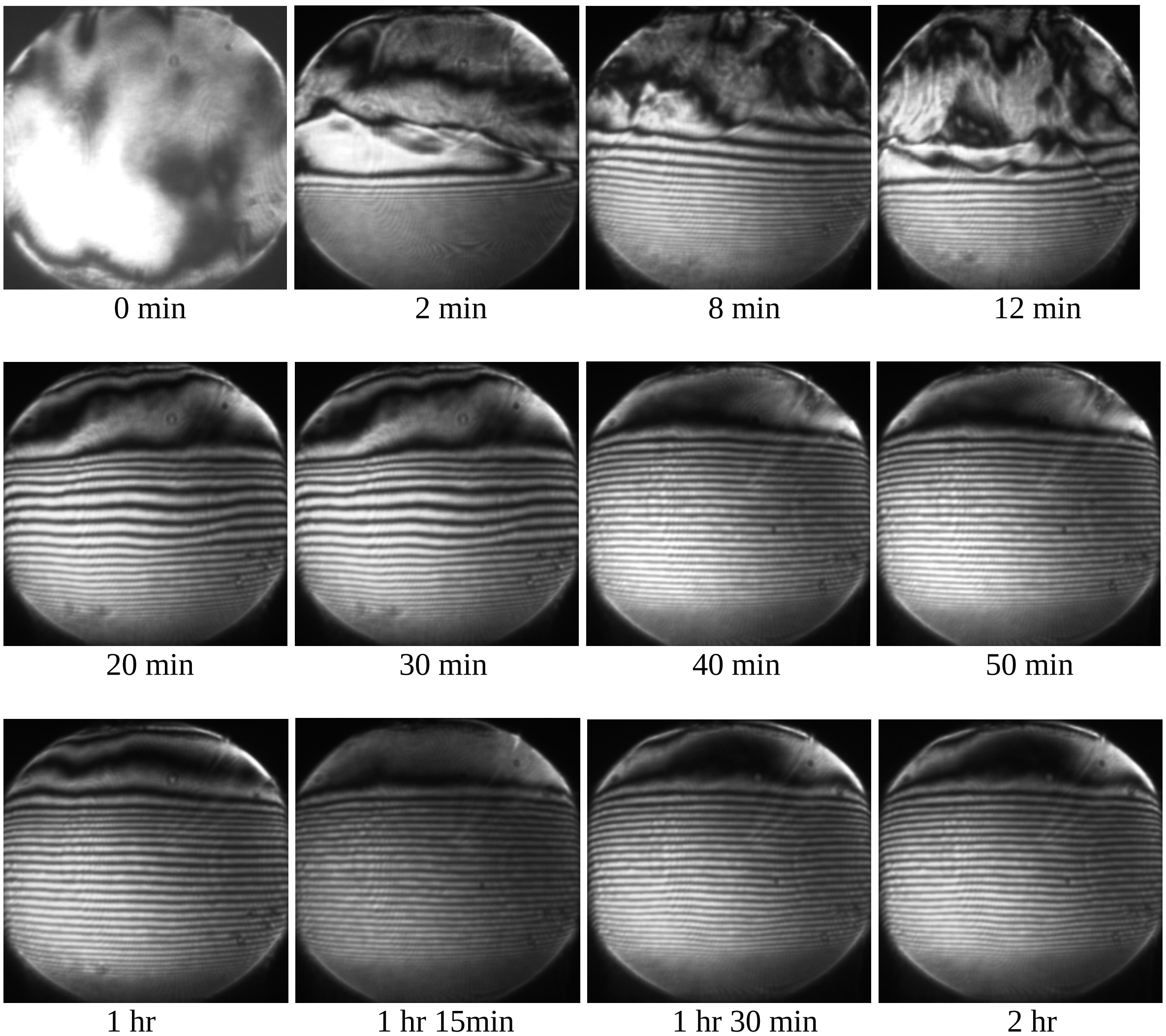

Figure 2: A layer of sugar applied at the base slowly dissolves in water. The concentration of sugar in water changes with time. It is accompanied by the appearance of interferometric fringes. Images adapted from doctoral dissertation of Susheel Bhandari, Indian Institute of Technology, Kanpur (2009).

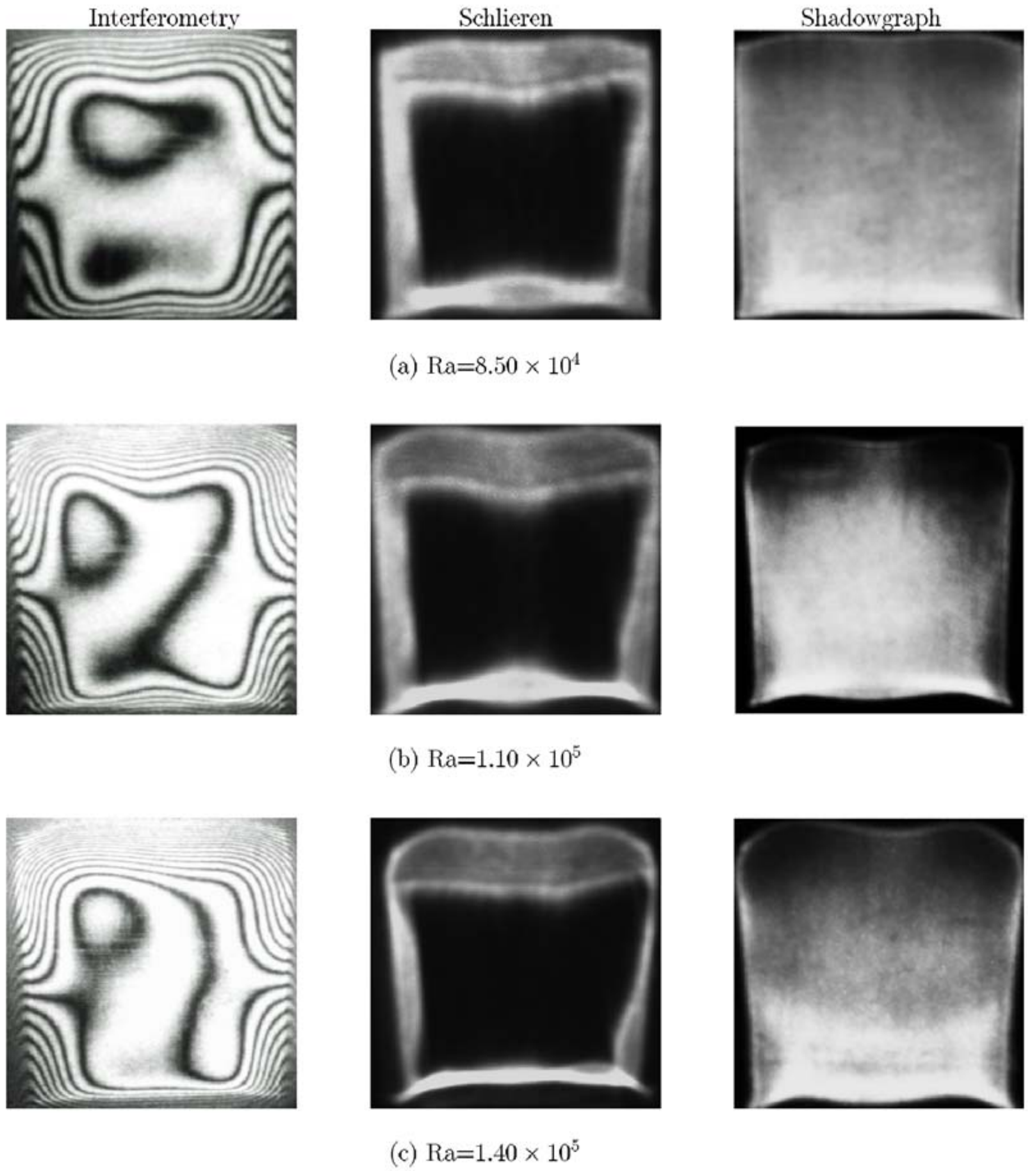

Figure 3: Natural convection in a rectangular cavity of square cross-section. The fluid medium in the cavity is air and convection is driven by the temperature differential between a hot lower wall and a cold upper wall. The side walls are insulated. The symbol Ra is Rayleigh number and is a measure of the strength of natural convection in the cavity. The first column carries interferometric fringes. The second and third columns contain a re-distribution of light intensity as obtained from schlieren and shadowgraph techniques. Images adapted from *Optical imaging and control of convection around a crystal growing from its aqueous solution*, K. Muralidhar, Atul Srivastava and P.K. Panigrahi, in New Developments in Crystal Growth Research, Nova Publishers, 2005, pp. 1-89.

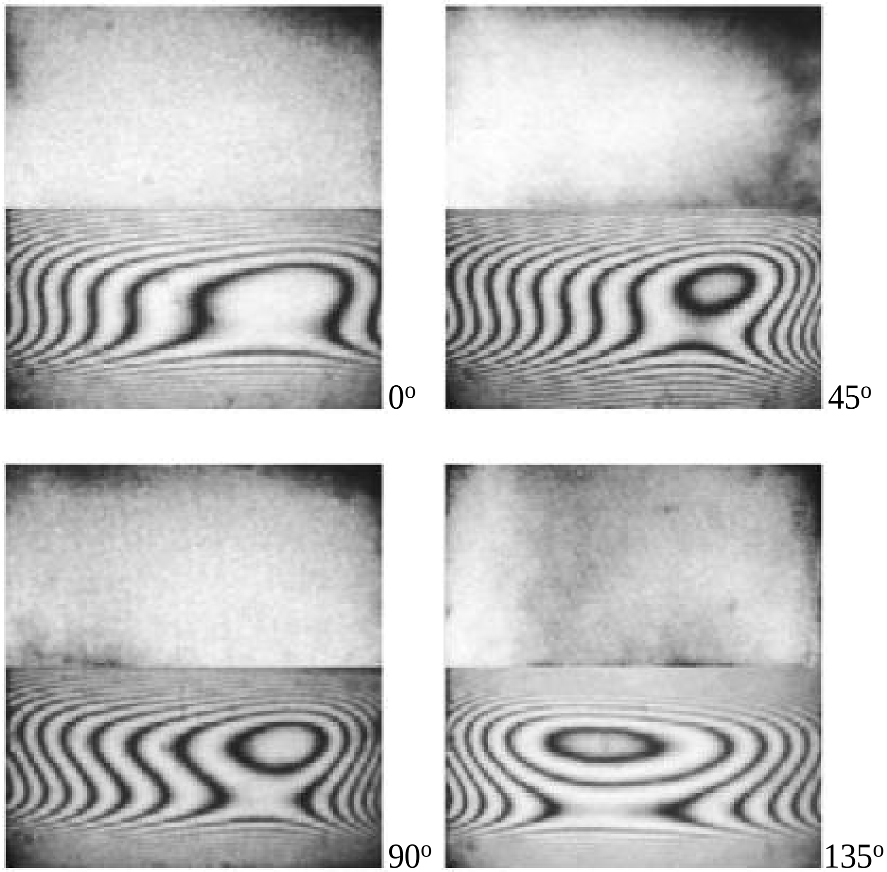

Figure 4: Buoyancy driven convection in an octagonal cavity half-filled with 50 cSt silicone oil, the rest being air. The lower surface is heated while the top surface is cooled. The figure shows interferometric projections when the thermal field is viewed in various directions – 0, 45, 90, and 135°. Images adapted from *Interferometric study of convection in superposed gas-liquid layers*, Sunil Punjabi, Doctoral dissertation, Indian Institute of Technology, Kanpur (2002).

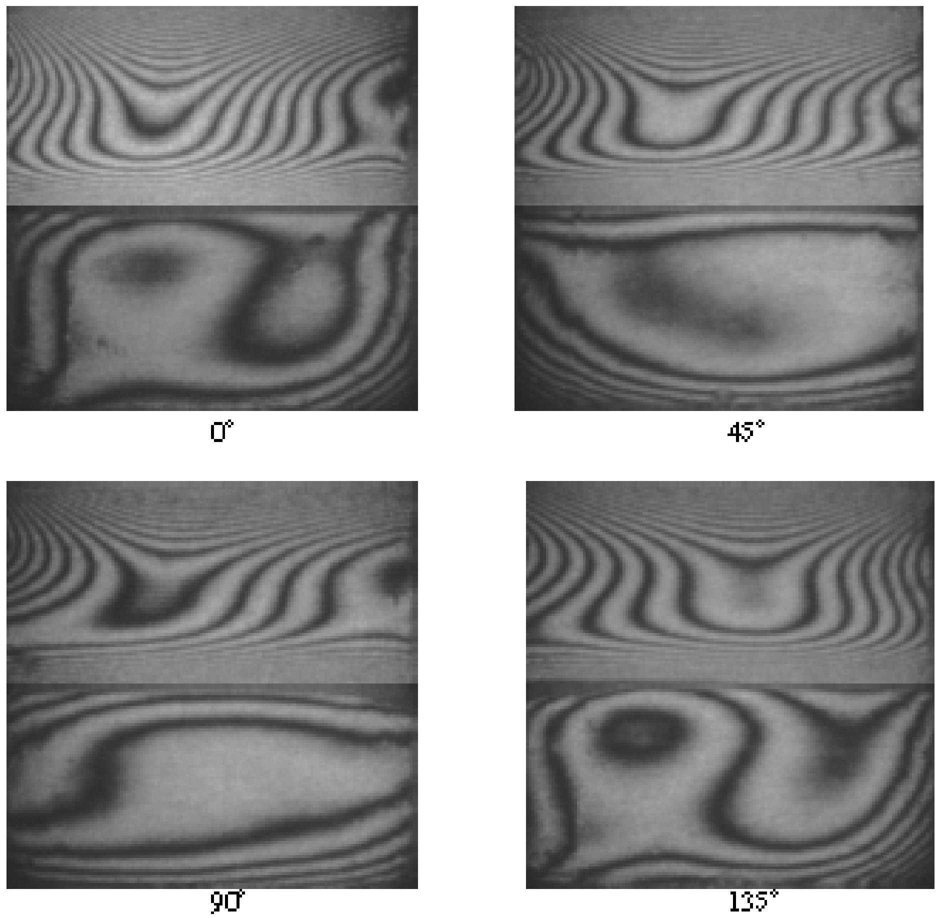

Figure 5: Long-time interferograms formed in an octagonal cavity containing silicone oil (50 cSt) floating over water as recorded from four different angles; Overall temperature difference is 1.8 K, the top plate being cooler than the one at the base. Of special interest are the energy and momentum transfer at the oil-water interface. Images adapted from *Buoyancy-driven convection in two superposed fluid layers in an octagonal cavity,* Sunil Punjabi, K. Muralidhar and P.K. Panigrahi, International Journal of Thermal Sciences, 43 (2004) 849-864.

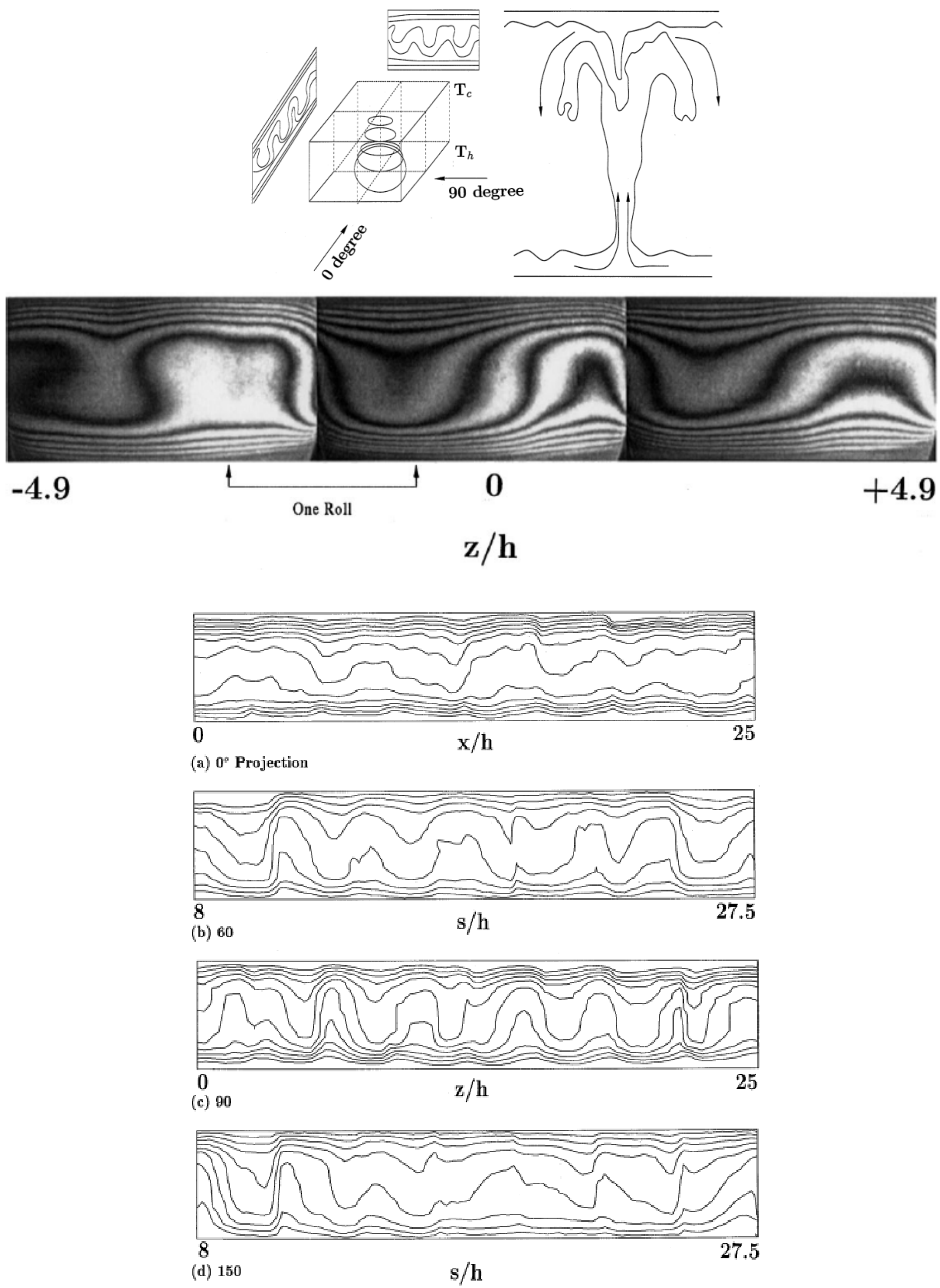

Figure 6: Buoyancy-driven convection in a differentially heated cavity. The roll patterns of the flow field are seen as fringe displacement in the interferograms. The flow pattern is three dimensional and sketched at the top of the figure. The corresponding interferograms seen from various viewing directions are shown below. Images adapted from *Experimental study of Rayleigh-Benard convection using interferometric tomography*, Debasish Mishra, Doctoral dissertation, Indian Institute of Technology, Kanpur (1998).

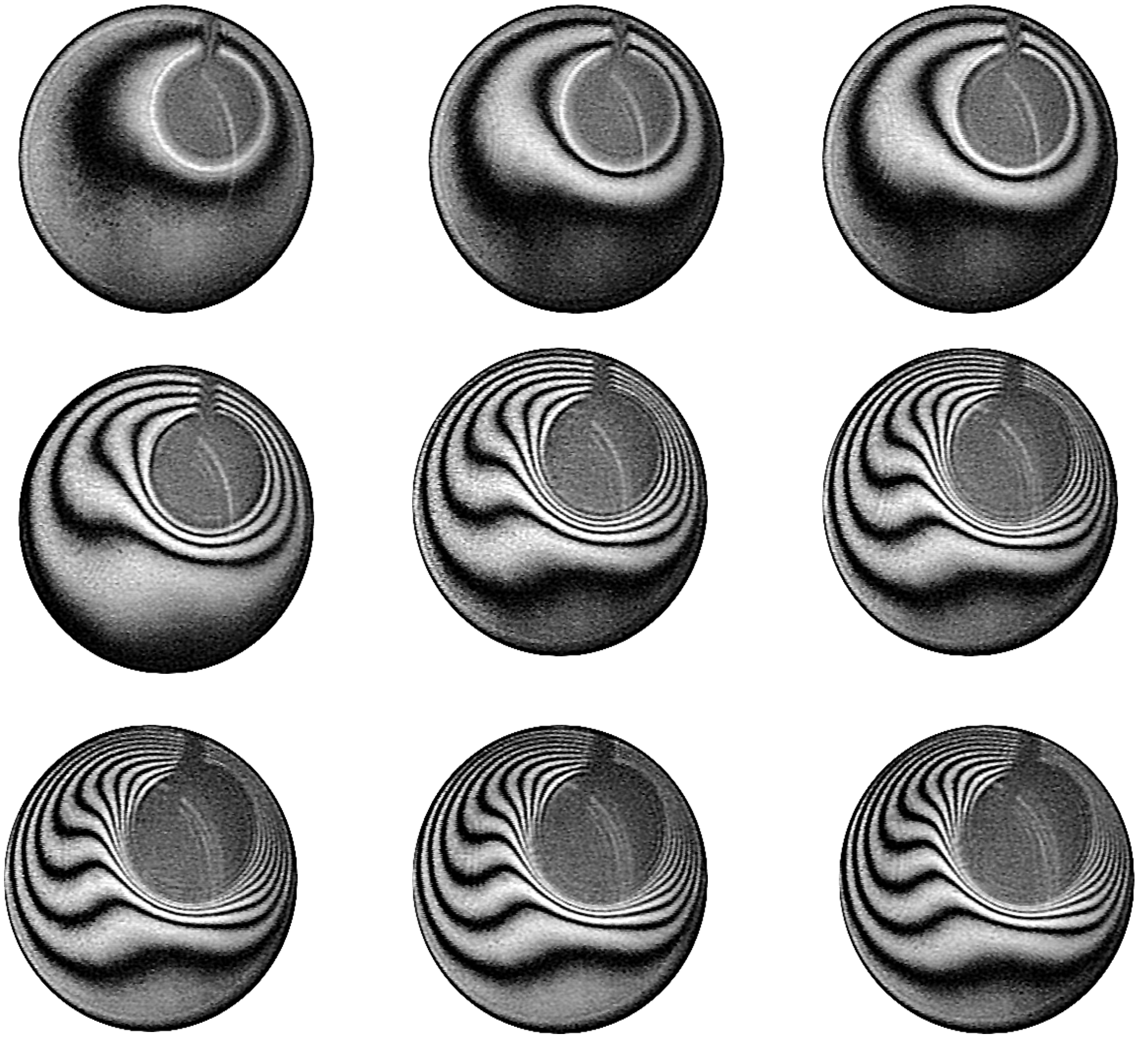

Figure 7: Interferograms recorded in an eccentric annulus with the gap filled with air. The inner cylinder is heated while the outer cylinder is cooled. The images show a time sequence of interferograms from the initial infinite fringe setting all the way till steady state is reached. Images adapted from *Interferometric study of steady and unsteady convection in cylindrical and eccentric annuli*, Manoj Ranjan, M.Tech. dissertation, Indian Institute of Technology, Kanpur, (2005).

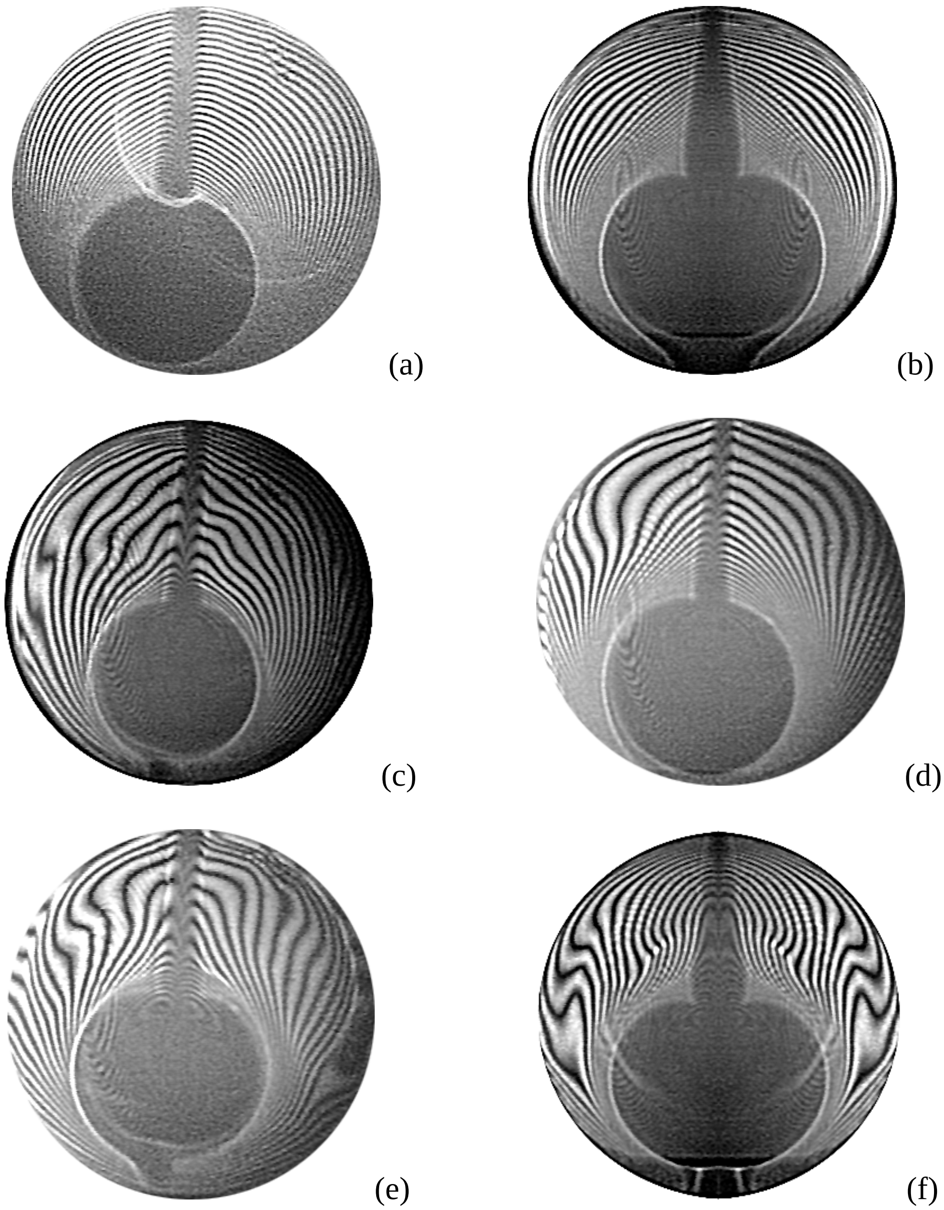

Figure 8: Interferograms recorded during heat transfer in an eccentric annulus when the gap is filed with 50 cSt silicone oil. The applied temperature differences increase from (a) to (e) from 0.2 to 2 K. When compared to air, the principal differences observed in the fringe patterns are an increase in the number of fringes, strong refraction errors near the inner cylinder, symmetric thermal fields about the position of the inner cylinder and weak convection effects. Images adapted from *Interferometric study of steady and unsteady convection in cylindrical and eccentric annuli*, Manoj Ranjan, M.Tech. dissertation, Indian Institute of Technology, Kanpur, (2005).