

Eulerian and Lagrangian studies in surface flow turbulence

John R. Cressman¹, Jahanshah Davoudi²,
Walter I. Goldberg¹ and Jörg Schumacher²

¹ Department of Physics and Astronomy, University of Pittsburgh, Pittsburgh,
PA 15260, USA

² Fachbereich Physik, Philipps-Universität, D-35032 Marburg, Germany

1. Introduction

Few studies of turbulence have been more important than L. F. Richardson's 1926 paper on the rate of separation of particle pairs in a turbulent flow [1]. He argued

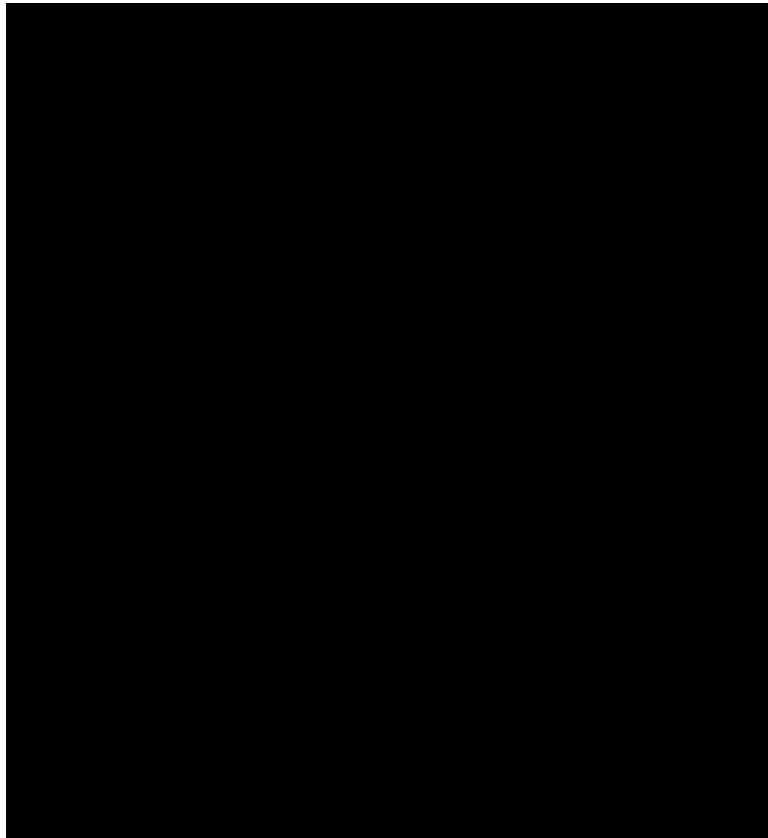


Figure 2. Image of a cloud of particles on the surface of a turbulent body of water. The particles which are 10^{-7}

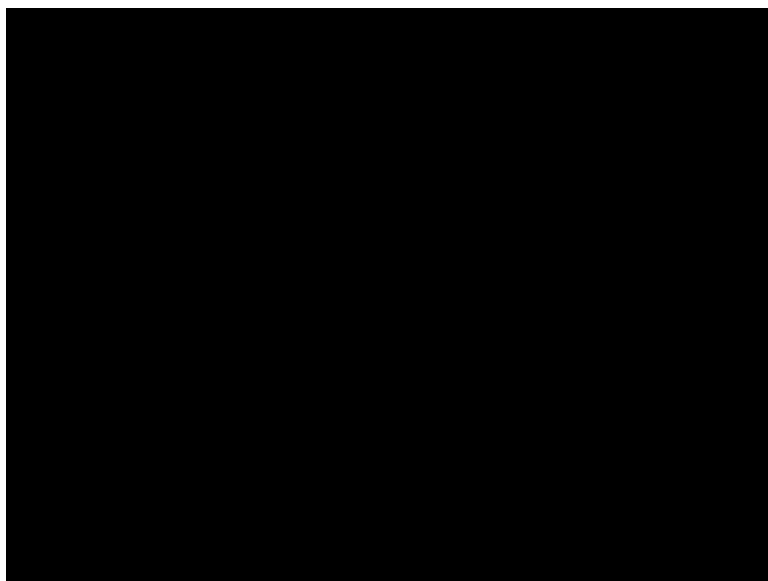
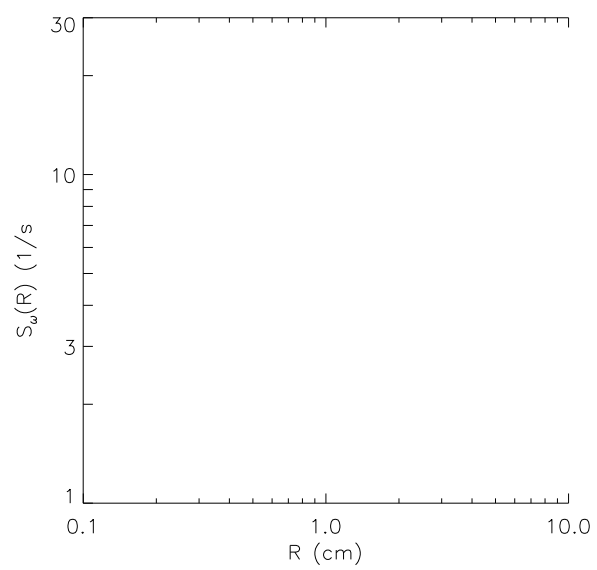


Figure 3. Experimental apparatus for surface studies. Two mirrors and a cylindrical lens produce a sheet of laser light at the surface or in the interior.

Eulerian and Lagrangian studies in surface flow turbulence

Figure 5.



Run No.	1	2	3	4	5
Aspect ratio (

Figure 10. Pair dispersion $h\Phi^2$

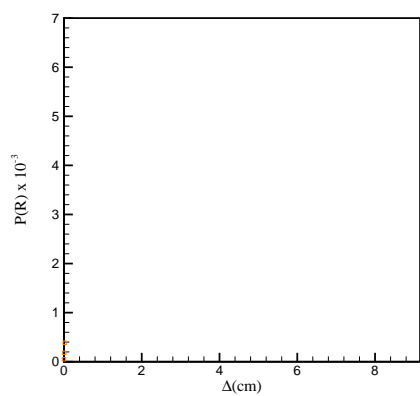


Figure 11.

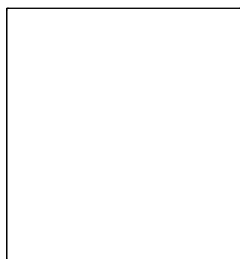


Figure 12. Evolution of two particular tracer triples in the surface plane. Bse

