

$D_{AB}$  = binary coefficient of mass diffusion in the mixture of gases A and B  
 $g$  = gravity acceleration  
 $h$  = height difference between the interfaces mercury-gas in the viscometer reservoirs  
 $L; L_{Hg}$  = length of gas capillary and of mercury tube, respectively  
 $n$  = molecular concentration  
 $N_{Re}$  = Reynolds number  
 $P; P_{tot.}$  = experimental and total pressure of the gas, respectively  
 $\Delta P$  = pressure drop corresponding to height difference,  $h$   
 $q; q_{Hg}$  = volumetric flow rate of the gas and of the mercury, respectively  
 $r; r_{Hg}$  = radius of gas capillary and of mercury tube, respectively  
 $R$  = gas law constant  
 $S_0$  = area of the interface mercury-gas at zero inclination of the viscometer  
 $S$  = area of the interface mercury-gas in the viscometer reservoirs during a run  
 $\bar{t}; t^*$  = time required for displacing the mercury and the gas during a run, respectively.  $\bar{t} = t^*$  when  $P \cong 50$  atm.  
 $T$  = absolute temperature  
 $X_i$  = radial distribution function at distance  $\sigma_i$  from the center of a molecule  $i$  having diameter  $\sigma_i$   
 $V$  = volume between contacts  $e_1$  and  $e_2$  in reservoir b of the viscometer  
 $V + V_I$  = gas volume in reservoir b of the viscometer at the beginning of the run  
 $V_{II}$  = gas volume in reservoir a of the viscometer at the beginning of the run  
 $\bar{V}$  = molar volume  
 $Z$  = compressibility factor of the gas,  $Z = P\bar{V}/RT$

#### Greek Letters

$\epsilon_0$  = distance between contacts  $e_1$  and  $e_2$  in reservoir b at zero inclination of the viscometer  
 $\eta; \eta_{Hg}$  = viscosity of the gas and of the mercury, respectively  
 $\theta$  = inclination angle of the viscometer  
 $\rho; \rho_{Hg}$  = density of the gas and of the mercury, respectively  
 $\sigma_i$  = molecular diameter of specie  $i$  ( $i = A, B, AB$ )  
 $\Omega_d; \Omega_v$  = generalized collision integrals for mass diffusivity and for viscosity of molecular pair AB, respectively

$\delta$  = parameter, defined by Equations (24), (25), related to the volume change of the gas during its displacement through the capillary

#### Subscripts

$( )_1$  = for viscosity and for mass diffusivity at  $P = 1$  atm.  
 $i$  = for component  $i$  ( $i = A, B, AB$ )  
 $1; 2$  = for quantities at the beginning and at the end of a run, respectively  
 $eff$  = for effective displaced volume of gas through the capillary

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## Comparison of Lagrangian Time Correlations Obtained from Dispersion Experiments and from Space-Time Correlation Functions

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The relation between Lagrangian and Eulerian statistics for turbulent flow has been approached only through approximations or models of the actual motion. Some of these approaches have been motivated by a purely theoretical

interest in the problem (1 to 5) and others by need to justify the interpretation of an experimental measurement (6 to 10). Altogether, little progress has been made in this endeavor despite its importance in the research on tur-