

- programs. S. D. Hansen and Q. D. McHarg (JA) 232
 Systems engineering approach to effective engine condition monitoring. David W. Leiby (PS, V. 34) 481
 Thermal coupling measurement method. L. A. Rosenthal and V. J. Menichelli (JSR) 282

Research Facilities and Instrumentation

- Acoustical levitation for space processing. Taylor G. Wang, Melvin M. Saffren, and Daniel D. Elleman (A/ A, July-August) 42
 Application of laser velocimeters for flow measurements. A. E. Lennert, J. O. Hornkohl, and H. T. Kalb (PS, V. 34) 77
 Comment on "Criteria for selecting curves for fitting to data." Robert G. Easterling (AIAA J, TC) 733
 —Reply by author to R. G. Easterling, T. J. Dylewski (AIAA J, TC) 734
 Considerations for the design of a second generation induction driven transonic wind tunnel. J. Braha, M. Salomon, A. Seginer, and J. Rom (JA) 729
 Debris shielding during high-speed erosion. W. G. Reinecke (AIAA J, TN) 1592
 Density survey in the hypersonic viscous shock layer on a sharp flat plate. J. M. Avidor and S. Lederman (AIAA J, TN) 993
 Development of an MHD-augmented, high enthalpy, shock tunnel facility. S. R. Pate, L. G. Siler, D. W. Stallings, and D. A. Wagner (AIAA J) 289
 Experiences in the design and application of turbine blade pyrometers. Herbert Katz (PS, V. 34) 409
 Experimental studies of a Ludwig tube high Reynolds number transonic tunnel. R. F. Starr and C. J. Schueler (AIAA J, SYN) 267
 Fiber optic and laser digital pressure transducers. Gordon W. Margerum, John W. Leonard, and Allen E. Fuhs (PS, V. 34) 217
 Flight simulation characteristics of the Langley high Reynolds number cryogenic transonic tunnel. Robert A. Kilgore, Jerry B. Adcock, and Edward J. Ray (JA) 593
 Flow properties in expansion tube with helium, argon, air, and CO₂. Charles G. Miller (AIAA J, TN) 564
 Ground testing and simulation—An overview: Part II: Aerodynamic testing. Bain Dayman Jr. and Anthony W. Fiore (A/ A, June) 56
 Laser velocimeter system development and testing. Jeffrey A. Asher (PS, V. 34) 141
 Measurement of instantaneous air angle and total temperature fluctuations behind transonic compressor rotors. Bruce V. Johnson, Henry V. Marman, John A. Brent, and Richard M. Hooper (PS, V. 34) 179
 Method for producing a uniform, low Reynolds number jet. George C. Greene and Donald F. Brink (JSR, EN) 604
 Modularized instrument system for turbojet engine test facilities. W. C. Nieberding and D. R. Englund Jr. (PS, V. 34) 205
 On the determination of the internal aerodynamics of compressors. B. A. Jones (PS, V. 34) 109
 On-the-shaft data systems for rotating engine components. Daniel J. Lesco, John C. Sturman, and William C. Nieberding (PS, V. 34) 131
 Pyrometer for measurement of surface temperature distribution on a rotating turbine blade. Donald R. Buchele and Daniel J. Lesco (PS, V. 34) 347
 Raman scattering applied to hypersonic air flow. Mervin E. Hillard Jr., E. Leon Morrisette, and M. Lawrence Emory (AIAA J, TN) 1160
 Response of a hot wire oscillating in a shear flow. R. H. Kirchhoff and R. A. Burbank (AIAA J, TN) 96
 Response of miniature pressure transducers to fluctuations in supersonic flow. E. Grande and G. C. Oates (PS, V. 34) 3
 Selected applications of a biaxial tiltmeter in the ground motion environment. G. L. Cooper and W. T. Schmars (JSR) 530
 Simultaneous Raman and laser velocimeter measurements. M. E. Hillard Jr., W. W. Hunter Jr., J. F. Meyers, and W. V. Feller (AIAA J, TN) 1445
 Some measurements on dynamic stall. A. G. Parker and J. Bicknell (JA) 371
 Study of a flight monitor for jet engine disk cracks using the critical length criterion of fracture mechanics. John P. Barranger (PS, V. 34) 325
 System for evaluation of F-15 inlet dynamic distortion. A. P. Farr and G. A. Schumacher (PS, V. 34) 59
 Thrust measuring system for electrothermal thrusters. B. C. Barber (JSR) 549
 Turbulence calibration of a hot wire anemometer. R. H. Kirchhoff and R. R. Safarik (AIAA J, TN) 710
 Turbulence measurements in a Mach 2.9 boundary layer using laser velocimetry. Dennis A. Johnson (AIAA J, TN) 711
 Wake growth and collapse in stratified flow. Gordon E. Merritt (AIAA J) 940

Safety

- Acoustic backscatter radar system for tracking aircraft trailing vortices. Martin Balser, Charles A. McNary, and Arthur E. Nagy (JA) 556
 Automatic detection and suppression of inlet buzz. L. O. Billig (PS, V. 34) 453
 Computer simulation of near midair collisions in the terminal environment. Richard B. Jones and Frederick H. Lutze Jr. (JA) 457
 Review of the compatibility of structural materials with oxygen. Alan F. Clark and Jerome G. Hust (AIAA J, SA) 441
 Visual perception of pilots in carrier landing. Theodore Gold (JA) 723

LAUNCH VEHICLE AND MISSILE (LV/ M) TECHNOLOGY

LV/ M Aerodynamic Heating

- Aerodynamic heat transfer to RSI tile surfaces and gap intersections. James C. Dunavant and David A. Throckmorton (JSR, EN) 437
 Calorimeter measurement of heat transfer at hypersonic conditions. Mitchell R. Wool, Andrew J. Murphy, and Roald A. Rindal (JSR) 363
 Evaluation of aerodynamic heating uncertainties for space shuttle. R. V. Masek, D. Hender, and J. A. Forney (JSR) 368
 Generalized flow in gaps and slots including the effects of ablation. Larry Cooper and Kurt E. Putz (JSR) 287
 Method for calculating aerodynamic heating on sounding rocket tangent ogive noses. L. D. Wing (JSR) 357
 Prediction of turbulent heat transfer and pressure on swept leading edges. Hugh W. Coleman and E. Clark Lemmon (JSR) 376
 Radial base heat-transfer gradients in turbulent flow. Bruce M. Bulmer (JSR, EN) 798
 Transpiration nosetip coolant flow control. John R. Schuster, Roger A. Glickman, and Douglas R. Hender (JSR) 152
 Vortex-induced heating to a cone-cylinder body at Mach 6. Jerry N. Hefner (JSR, EN) 127
 Vortex-induced heating to cone flaps at Mach 6. Jerry N. Hefner and Allan H. Whitehead Jr. (JSR, EN) 200

LV/ M Aerodynamics

- Analysis of the nonlinear rolling motion of finned missiles. Charles J. Cohen, Thomas A. Clare, and Frank L. Stevens (AIAA J) 303
 Approximate method for estimating wake vortex strength. John E. Fidler (AIAA J) 633
 Calculation of nonlinear lift and pitching moment coefficients for slender wing-body combinations. H. Otto (JA, EN) 489
 Contribution of a wall shear stress to the Magnus effect on nose shapes. Ira D. Jacobson (AIAA J, TN) 1003
 Cylindrical wing-body configurations for space-limited applications. D. E. Swanson and C. T. Crowe (JSR, EN) 60
 Moments and forces on general convex bodies in hypersonic flow. Jack Pike (AIAA J) 1241

LV/ M Configurational Design

- Similarity laws for missiles of minimum ballistic factor. V. B. Tawakley (JSR, EN) 671

LV/ M Dynamics and Control

- Closed-loop flight vehicle qualification testing. Robert W. Phillips and John K. Kryvoruka (JSR, SYN) 355
 Digital filters using observers applied to ICBM control system design. J. M. Johnson Jr. (JSR) 498
 Effect of transverse products of inertia on re-entry vehicle trim angle behavior. Albert E. Hodapp Jr. (JSR, EN) 733
 Effects of unsymmetrical stability derivative characteristics on re-entry vehicle trim angle behavior. Albert E. Hodapp Jr. (JSR) 300
 On Murphy's stability criterion. J. P. Sharma (JSR, EN) 432
 Optimal guidance for aerodynamically controlled re-entry vehicles. Miguel A. de Virgilio, Gerald R. Wells, and Earl E. Schiring (AIAA J) 1331

LV/ M Dynamics, Uncontrolled

- Analysis of the nonlinear rolling motion of finned missiles. Charles J. Cohen, Thomas A. Clare, and Frank L. Stevens. (AIAA J) 303
 Analytical model for liquid rocket propellant feedline dynamics. Jesse L. Holster and William J. Astleford (JSR) 180
 Attitude motion of a roll accelerated vehicle. Richard T. Theobald (JSR, EN) 857
 Determination of allowable tolerances for asymmetries of a free rolling missile. Albert Kirszenblat (JSR) 295
 Dynamics of sounding rockets at burnout. William C. Womack, Charles W.

- Bert, and Farrell J. Perdreauxville (JSR) 716
 Minimization method for treating convergence in modal synthesis, A. T. K. Hasselman and Gary C. Hart (AIAA J) 316

LV/ M Fabrication

LV/ M Flight Testing

- Flutter test analysis in the time domain using a recursive system representation. Jan Robert Wright (JA, EN) 774
 Information content subsetting of highly correlated error sources. I. M. Weiss (AIAA J) 1726

LV/ M Fuel and Propellant Systems (Including Storage and Transfer)

- Flow visualization of thermal stratification with localized heat sources. Thomas M. Lovrich, Sidney H. Schwartz, and Leroy A. Holmes (JSR) 664
 Mars surface-to-orbit vehicles for sample return missions. William L. Weaver (JSR, EN) 426
 Outgas dominated pressure distribution in a multilayer insulation system. J. T. Lin (AIAA J, TN) 1590
 Review of the compatibility of structural materials with oxygen. Alan F. Clark and Jerome G. Hust (AIAA J, SA) 441
 Studies on mixed fuels—Hydrazine and ethyl alcohol system. R. P. Rastogi, H. J. Singh, and K. Kishore (AIAA J, TN) 227

LV/ M Guidance Systems (Including Command and Information Systems)

- Drift compensation and acceleration resolution for a rotating platform IMU. A. C. Liang and D. L. Kleinbub (JSR, SYN) 547
 Guidance of a bank-to-turn missile with altitude control requirements. E. P. Cunningham (JSR, EN) 340
 Optimal guidance for aerodynamically controlled re-entry vehicles. Miquel A. de Virgilio, Gerald R. Wells, and Earl E. Schiring (AIAA J) 1331
 Selected applications of a biaxial tiltmeter in the ground motion environment. G. L. Cooper and W. T. Schmars (JSR) 530
 Torque development on a spherical body due to spin up of the concentric spherical container. Ram Sinha (AIAA J, TN) 404

LV/ M Gust Loading and Wind Shear

- Probability of first passage failure for stationary random vibration. J. B. Roberts (AIAA J) 1636

LV/ M Mission Studies and Economics

- Comparison of advanced propulsion capabilities for future planetary missions. John C. Niehoff and Alan L. Friedlander (JSR) 566
 High-speed computation of ascent trajectories within iterative loops using collocation methods. Peter R. Hempel (AIAA J, SYN) 1467
 Methodology for reliability-cost-risk analysis of satellite networks. J. S. Greenberg and G. A. Hazelrigg Jr. (JSR) 650
 Probability of crashing for a terrain-following missile. Edward P. Cunningham (JSR, EN) 257
 Single-stage shuttles for ground launch and air launch. Robert Salkeld (A/ A, March) 52
 Systems analysis of Titan family for orbiting multiple communication satellites. J. M. Edgar (PS, V.32) 405

LV/ M Propulsion System Integration

- Coolant pressurization and expulsion for transpiration nozzles. Theodore E. Ward and John R. Schuster (JSR) 518
 Development of the Astrobee F sounding rocket system. R. B. Jenkins, J. P. Taylor, and H. J. Honecker Jr. (JSR, EN) 56
 Minuteman III liquid propulsion system storage surveillance program. Leonard Usiak and Philip Ramsden (JSR, EN) 792
 Propulsion systems for single-stage shuttles. Rudi Beichel (A/ A, Nov.) 32

LV/ M Simulation

- Closed-loop flight vehicle qualification testing. Robert W. Phillips and John K. Kryvoruka (JSR, SYN) 355
 Debris shielding during high-speed erosion. W. G. Reinecke (AIAA J, TN) 1592

LV/ M Structural Design (Including Loads)

- Buckling of short cylindrical shells under axial compression. D. Durban and A. Libai (AIAA J) 909
 Comment on the equation for aeroelastic divergence of unguided launch

vehicles. N. G. Humbad (AIAA J, TN) 1739

Optimal payload ascent trajectories of winged vehicles. James A. Martin (JSR, EN) 860

Rocket exhaust flow in tube launchers. James L. Batson and John J. Bertin (JSR, SYN) 739

Viscoelastic fracture of solid propellants in pressurization loading conditions. E. C. Francis, C. H. Carlton, and G. H. Lindsey (JSR) 691

LV/ M Subsystem Design

- Base flow analysis for dual-engine booster. Yong S. Hong (JSR, SYN) 209
 Rocket exhaust flow in tube launchers. James L. Batson and John J. Bertin (JSR, SYN) 739
 Systems analysis of Titan family for orbiting multiple communication satellites. J. M. Edgar (PS, V.32) 405

LV/ M System and Component Ground Testing

- Ground testing and simulation—An overview: Part IV: Propulsion testing. Michael Pindzola (A/ A, July-August) 63
 On multiple-shaker resonance testing. R. R. Craig Jr. and Y.-W. T. Su (AIAA J) 924
 Simulation of a ground facility for testing ramjets under flight conditions. William Mitchell (JSR, SYN) 449

LV/ M Trajectories

- Approximate impact dispersion methods for symmetric entry vehicles. T. D. Burton (JSR) 777
 High-speed computation of ascent trajectories within iterative loops using collocation methods. Peter R. Hempel (AIAA J, SYN) 1467
 Mars surface-to-orbit vehicles for sample return missions. William L. Weaver (JSR, EN) 426
 Optimal payload ascent trajectories of winged vehicles. James A. Martin (JSR, EN) 860

Launch Vehicle Systems (Including Ground Support)

- Agenda primary and integrated secondary propulsion systems. S. C. DeBrock and C. J. Rudey (JSR, SYN) 769
 Analysis of deployment and inflation of large ribbon parachutes. D. F. McVey and D. F. Wolf (JA) 96
 Mars surface-to-orbit vehicles for sample return missions. William L. Weaver (JSR, EN) 426
 Prediction of pressure fluctuation in sounding rockets and manifolded recovery systems. John F. Laudadio (JSR, EN) 119
 Single-stage shuttles for ground launch and air launch. Robert Salkeld (A/ A, March) 52
 Space shuttle/ The new baseline. M. S. Malkin (A/ A, January) 62

Missile Systems

- Analysis of compressible turbulent flow over a yawed cone. A. Robin Mowlem and Russell A. Smith (AIAA J, SYN) 1171
 Chamber bleed auxiliary power unit. J. A. Murray (JSR) 808
 Effect of thrust on the longitudinal oscillations of missiles. E. V. Laitone and Wen-Fan Lin (JSR, EN) 121
 Information content subsetting of highly correlated error sources. I. M. Weiss (AIAA J) 1726
 On Murphy's stability criterion. J. P. Sharma (JSR, EN) 432

Sounding Rocket Systems

- ARIES—A controlled sounding rocket. Robert D. Arritt (A/ A, Dec.) 50
 Development of the Astrobee F sounding rocket system. R. B. Jenkins, J. P. Taylor, and H. J. Honecker Jr. (JSR, EN) 56
 Dynamics of sounding rockets at burnout. William C. Womack, Charles W. Bert, and Farrell J. Perdreauxville (JSR) 716
 Effect of thrust on the longitudinal oscillations of missiles. E. V. Laitone and Wen-Fan Lin (JSR, EN) 121
 Optimal scan of the sky from a rocket. Russell A. Nidey (AIAA J, TN) 1162
 Sounding rocket payload recovery systems. Donald W. Johnson (JSR, EN) 424

Tracking Systems

- Aircraft localization with a time-frequency system. Jean Besson and Jean Boillot (JA, SYN) 193
 Information content subsetting of highly correlated error sources. I. M. Weiss (AIAA J) 1726

MARINE TECHNOLOGY***Marine Electric Power Systems******Marine Hydrodynamics, Vessel and Control Surface***

- Analysis of a wave energy conversion buoy. Michael E. McCormick (JH) 77
- Analytical prediction of the influence of polymer additives on the shear drag of bodies of revolution. Frederick L. Test (JH, SYN) 45
- Correlation of force measurements and separated flow regions on surface piercing struts. P. D. Swales, R. C. McGregor, and A. J. Wright (JH, EN) 72
- Coupled pitch and heave porpoising instability in hydrodynamic planing. Peter R. Payne (JH) 58
- Dynamic hinge moment of a low aspect ratio control surface. Gerald C. Lauchle (JH, EN) 119
- Frequency-dependent wave damping in the time domain. G. M. Connell and A. H. Gray (JH, EN) 167
- Perturbation-energy approach for the development of the nonlinear equations of ship motion. Ali H. Nayfeh, Dean T. Mook, and Larry R. Marshall (JH) 130
- Separation over a flat plate-wedge configuration at oceanic Reynolds numbers. David R. Campbell (JH, SYN) 3
- Subharmonic and superharmonic resonances in the pitch and roll modes of ship motions. Dean T. Mook, Larry R. Marshall, and Ali H. Nayfeh (JH) 32

Marine Materials, Corrosion/ Erosion***Marine Mooring Systems and Cable Mechanics***

- Comment on "The lift force due to von Karman's vortex wake." Peter R. Payne (JH, TC) 121
- Reply by author to P. R. Payne. D. W. Sallet (JH, TC) 123
- Comment on "The lift force due to von Karman's vortex wake." M. Tanner (JH, TC) 124
- Dynamic forces exerted by oscillating cables. John P. Breslin (JH) 19

Marine Propulsion System Integration***Marine Vessel Design (Including Loads)***

- Comment on "Canadian advances in surface-piercing hydrofoils." W. A. Graig (JH, TC) 74
- Comment on "Ram wing surface effect boat." Alexander M. Lippisch (JH, TC) 76
- Hydrodynamics of large objects in the sea. Part I—Hydrodynamic analysis. C. J. Garrison (JH) 5
- Inelastic asymmetric buckling of ring-stiffened cylindrical shells under external pressure. L. H. N. Lee (AIAA J) 1051
- Inelastic buckling of a deep spherical shell subject to external pressure. N. C. Huang and G. Funk (AIAA J) 914
- Response of air cushion vehicles to random seaways and the inherent distortion in scale models. D. R. Lavis, R. J. Bartholomew, and J. C. Jones (JH) 83
- Shaping of axisymmetric bodies for minimum drag in incompressible flow. Jerome S. Parsons, Raymond E. Goodson, and Fabio R. Goldschmied (JH) 100

Marine Vessel Systems, Submerged

- Shaping of axisymmetric bodies for minimum drag in incompressible flow. Jerome S. Parson, Raymond E. Goodson, and Fabio R. Goldschmied (JH) 100
- Systems identification: Application to underwater vehicle dynamics. B. E. Sandman and J. G. Kelly (JH) 94

Marine Vessel Systems, Surface

- Comment on "Canadian advances in surface-piercing hydrofoils." W. A. Graig (JH, TC) 74
- Comment on "Ram wing surface effect boat." Alexander M. Lippisch (JH, TC) 76
- Dynamic forces exerted by oscillating cables. John P. Breslin (JH) 19
- Response of air cushion vehicles to random seaways and the inherent distortion in scale models. D. R. Lavis, R. J. Bartholomew, and J. C. Jones (JH) 83

Marine Vessel Trajectories, Stability, and Control

- Coupled pitch and heave porpoising instability in hydrodynamic planing. Peter R. Payne (JH) 58
- Dynamic hinge moment of a low aspect ratio control surface. Gerald C. Lauchle (JH, EN) 119

- Frequency-dependent wave damping in the time domain. G. M. Connell and A. H. Gray (JH, EN) 167
- Generalized quasi-linearization method. D. K. Scharmack and N. R. Sandell Jr. (AIAA J) 1236
- Response of air cushion vehicles to random seaways and the inherent distortion in scale models. D. R. Lavis, R. J. Bartholomew, and J. C. Jones (JH) 83
- Systems identification: Application to underwater vehicle dynamics. B. E. Sandman and J. G. Kelly (JH) 94

Marine Vessel Vibration***Oceanography, Physical and Biological***

- Effect of a wavy bottom on Kelvin-Helmholtz instability. A. Mitra and M. D. Greenberg (JH) 53
- Mathematical modeling for the detection of fish by an airborne laser. David L. Murphree, Clayborne D. Taylor, and Ronald W. McClendon (AIAA J) 1686

Propulsion System Hydrodynamics

- Effect of a wavy bottom on Kelvin-Helmholtz instability. A. Mitra and M. D. Greenberg (JH) 53

Sea Pollution Containment and Control***Undersea Acoustics******Undersea Communication******Undersea Extra-Vehicular Activity***

- Thermal protection for divers. W. W. McCrory (JH) 115

Undersea Habitability and Life Support Systems

- Analytic model for assessing the thermal performance of scuba divers. Leslie D. Montgomery (JH) 108
- Apparatus and techniques for safe, economical work in hostile environments. H. Almqvist and B. Jansson (JH) 125

Undersea Medicine (Including Psychology, Pressure Effects, etc.)

- Analytic model for assessing the thermal performance of scuba divers. Leslie D. Montgomery (JH) 108
- Apparatus and techniques for safe, economical work in hostile environments. H. Almqvist and B. Jansson (JH) 125

PROPULSION***Airbreathing Engine Testing***

- Advances in measuring techniques for turbine cooling test rigs: Status report. Frank G. Pollack (PS, V.34) 371
- Aircraft turbine engine emissions under simulated supersonic flight conditions. R. C. German, C. E. Robinson, M. D. High, and R. F. Lauer (JA) 472
- Current state-of-the-art for airbreathing combustor measurements. W. M. Shaffernocker (PS, V.34) 227
- Dynamic flow studies by application of pressure and velocity sensors on axial flow fan blades. John T. Carroll (PS, V.34) 115
- Engine condition monitor system to detect foreign object damage and crack development. H. R. Hegner (PS, V.34) 531
- Gas temperature-density (GTD) sensor for turbine inlet gas temperature measurement. J. Van Roberts and David A. Rohy (PS, V.34) 355
- Heat transfer measurements in turbines. J. F. Louis, A. M. Demirjian, and R. F. Topping (PS, V.34) 331
- Holography of JP-4 droplets and combusting boron particles. B. J. Matthews, R. F. Wuerker, H. F. Chambers Jr., and J. Hojnacki (PS, V.34) 297
- Inflight engine condition monitoring system. G. C. Van Cleve (PS, V.34) 471
- In-line oil monitor and its role in engine condition monitoring. The. George F. Skala (PS, V.34) 499
- Instrumenting a stoichiometric turbine development engine. Ronald P. Schwedland and Morris F. Hall (PS, V.34) 387
- Investigation of the use of holography in studying supersonic flow in inlets. W. C. Spring III and W. C. Ragsdale (PS, V.34) 95
- Jet engine soot emission measured at altitude. J. M. Rosen and R. Greegor (JA, EN) 243
- Measurement techniques for supersonic combustion testing. R. C. Orth, F. S. Billig, and S. E. Grenleski (PS, V.34) 263
- Modularized instrument system for turbojet engine test facilities. W. C. Nieberding and D. R. Englund Jr. (PS, V.34) 205