

- Reachable sets analysis—An efficient technique for performing missile/sensor tradeoff studies. David M. Salmon and Walter Heine (AIAA J) 927
- An application of Kalman techniques to aircraft and missile radar tracking. G. T. Aldrich and W. B. Krabill (AIAA J) 932
- Neighboring extremals for optimal control problems. C. E. Hymas, R. K. Cavin III, and D. Colunga (AIAA J) 1101
- Second-order optimality conditions for variable end time terminal control problems. Lincoln J. Wood and Arthur E. Bryson Jr. (AIAA J) 1241
- Fast triangular formulation of the square root filter. Neal A. Carlson (AIAA J) 1259
- Real-time optimal guidance for orbital maneuvering. Audrey O. Cohen and Kenneth R. Brown (AIAA J) 1266
- N-burn optimal analytic trajectories. Donald J. Jezewski (AIAA J) 1373
- Phase lead S-plane compensation. Itzhack Y. Bar-Itzhack (AIAA J) 1521
- Effects of resonant tesseral gravity coefficients on Viking-type orbits. Harold R. Compton, James R. Schiess, and William J. Breedlove Jr. (AIAA J) 1743
- Multipoint guidance—An efficient implementation of predictive guidance. David M. Salmon (AIAA J) 1749
- Use of accelerometers to determine tilts and displacements. Michael Reichle and Hugh Bradner (AIAA J, TN) 735
- On the fuel optimality of cruise. Jason L. Speyer (JA, EN) 763
- Elimination of square roots from ballistics equations. Ralph M. Toms (JSR, EN) 815
- Riccati transformation for gradient optimization techniques. W. E. Williamson and T. J. Eller (AIAA J, TN) 881
- Application of nonlinear estimators to hereditary systems. J. R. Schiess, V. R. Roland, and W. R. Wells (AIAA J, TN) 1414
- Integrals for optimal flight over a spherical Earth. H. Gardner Moyer (AIAA J, TN) 1441
- A universal three-angle basis for rotational kinematic analysis, simulation and control. James Nohl Churchyard (JSR, ERR) 480
- Optimal desaturation of momentum exchange control systems. C. D. Johnson (AIAA J, ERR) 768

Reliability, Quality Control, and Maintainability

- Needed: Rational testing of aerospace vehicles. Anthony M. Smith and Thomas D. Matteson (A/A, August) 69
- Fracture mechanics applications in materials selection, fabrication sequencing and inspection. William E. Krupp and David W. Hoepfner (JA) 682

Research Facilities and Instrumentation

- Pressure and current effects on the thermal efficiency of an MPD arc used as a plasma source. Thomas J. Pivrotto (AIAA J, SYN) 12
- A laboratory simulation of the ionospheric plasma. Daniel R. Pigache (AIAA J, SYN) 129
- Starting process in the nozzle of a nonreflected shock tunnel. R. J. Stalker and N. R. Mudford (AIAA J, SYN) 265
- Remote sensing of CF₄ number density in a hypersonic flow using Raman scattering. Mervin E. Hillard Jr., M. Lawrence Emory, and A. R. Bandy (AIAA J, SYN) 775
- Linear and rotational quartz fiber accelerometers for geophysical and inertial use. B. Bartholomew, B. Block, and J. Dratler Jr. (AIAA J, SYN) 1227
- Dual-hologram interferometry: A new technique for wind-tunnel testing. (A/A, December) 27
- A facility for long-term ion thruster system testing. Howard F. McKinney and Richard A. Dutton (JSR) 42
- A method for transonic wind-tunnel corrections. Antonio Ferri and Paolo Baronti (AIAA J) 63
- Electron beam visualization in hypersonic airflows. H. F. Lee and S. L. Petrie (JA) 239
- Design and development of the United Aircraft Research Laboratories Acoustic Research Tunnel. Robert W. Paterson, Paul G. Vogt, and William M. Foley (JA) 427
- Transonic flow quality improvements in a blowdown wind tunnel. James M. Cooksey and John W. Arnold (JA) 554
- High-Reynolds-number cryogenic wind tunnel. Michael J. Goodyer and Robert A. Kilgore (AIAA J) 613
- Rapid scanning, three-dimensional hot-wire anemometer surveys of wing-tip vortices. V. R. Corsiglia, R. G. Schwind, and N. A. Chigier (JA) 752
- Thermal and momentum diffusivity measurements in a turbulent stratified flow. Gordon Merritt and George Rudinger (AIAA J) 1465
- Visual display of the spatial distribution of colloidal particle beams. J. D. Hepburn, F. S. Chute, and F. E. Vermeulen (AIAA J, TN) 370
- High Reynolds number experimental data for forebody axial force. John William Davis and Robert F. Graham (AIAA J, TN) 379
- Spacecraft applications of high-temperature electrically conducting ceramics. Carl R. Halbach, Russell J. Page, and Owen J. McCaughey (JSR, EN) 415
- Blockage corrections for large bluff bodies near a wall in a closed jet wind tunnel. T. N. Krishnaswamy, G. N. V. Rao, and K. R. Reddy (JA, EN) 634
- Insensitivity of single particle time domain measurements to laser

- velocimeter "Doppler ambiguity." Dennis A. Johnson (AIAA J, TN) 890
- Heat flux probe as a flowfield diagnostic. Irwin E. Vas (AIAA J, TN) 1576
- Comments on "Theory of ion boundary layer." A. G. Hammitt (AIAA J, TC) 1597
- Reply by authors to A. G. Hammitt. P. C. T. deBoer and R. A. Johnson (AIAA J, TC) 1598

Safety

- Modeling of aircraft position errors with independent surveillance. David E. Stepper (AIAA J) 1273
- Blockage corrections for large bluff bodies near a wall in a closed jet wind tunnel. T. N. Krishnaswamy, G. N. V. Rao, and K. R. Reddy (JA, EN) 634

LAUNCH VEHICLE AND MISSILE (LV/M) TECHNOLOGY

LV/M Aerodynamic Heating

- Approximate method for calculating heat transfer to yawed cylinders in laminar flow. Shoichi Sayano and George F. Greenwald (JSR, EN) 157
- Flight test correlation technique for turbulent base heat transfer with low ablation. Bruce M. Bulmer (JSR, EN) 222
- Mach number and Reynolds number effect on orbiter/tank interference heating. Theodore R. Creel Jr. (JSR, EN) 535
- Turbulent heat transfer to a fin leading edge—Flight test results. E. Clark Lemmon and Hugh W. Coleman (AIAA J, TN) 571
- Turbulent interference heating on several small fin configurations. Hugh W. Coleman and E. Clark Lemmon (JSR, EN) 820
- New thermodynamic functions for the C₃ molecule. W. E. Pearson and W. C. Davy (AIAA J, TN) 1207
- Transpiration cooling in three-dimensional laminar boundary-layer flow near a stagnation point. D. R. Jeng and Donald W. Williams (AIAA J, TN) 1560

LV/M Aerodynamics

- Influence of boundary-layer stability on the Magnus effect. Ira D. Jacobson and J. B. Morton (AIAA J, SYN) 8
- Magnus effect on spinning bodies of revolution. H. L. Power and J. D. Iversen (AIAA J, SYN) 417
- Experimental correlation between the flow and Magnus characteristics of a spinning ogive-nose cylinder. James M. Martin and Charles W. Ingram (AIAA J, SYN) 901
- Verification of ground test data by instrumented flight test of an artillery shell. Stanley D. Kahn, Vural Oskay and John Whiteside (JA) 143
- Correlation of Magnus force data for slender spinning cylinders. James D. Iversen (JSR) 268
- Newtonian aerodynamic forces from Poisson's equation. Jack Pike (AIAA J) 499
- Occurrence and inhibition of large yawing moments during high-incidence flight of slender missile configurations. W. H. Clark, J. R. Peoples, and M. M. Briggs (JSR) 510
- Calculation of turbulent boundary layers and wall jets over curved surfaces. F. A. Dvorak (AIAA J) 517
- Static stability and drag studies for bodies of revolution in supersonic flow. Hans-Joachim Luckert (JSR) 703
- Perturbation methods in atmospheric flight mechanics. Peter H. Zipfel (AIAA J) 1247
- Estimation of aerodynamics for slender bodies alone and with lifting surfaces at α 's from 0° to 90°. Leland H. Jorgensen (AIAA J, TN) 409
- Effect of base mounted cylinders on a supersonic near wake. Richard A. Merz, Robert H. Page, and Christian E. G. Przirembel (JSR, EN) 470
- Correlation of hypersonic zero-life drag data. John J. Rehder (JSR, EN) 622
- Supersonic flow about slab delta wings and wing-body configurations. Chong-Wei Chu (JSR, EN) 741
- A graphical method for the investigation of shock interference phenomena. Davis H. Crawford (AIAA J, TN) 1590
- Comment on "Wind-tunnel Magnus testing of a canted fin or self-rotating configuration." F. J. Regan (AIAA J, TC) 413
- Reply by author to F. J. Regan. Anders S. Platou (AIAA J, TC) 415
- Comment on "Simplification of the wing-body problem." Alexander H. Flax (JA, TC) 640
- Comment on "Lift of wing-body combination." Alexander H. Flax (AIAA J, TC) 896
- Reply by author to A. H. Flax. H. T. Yang (AIAA J, TC) 896

LV/M Configurational Design

- A graphical method for the investigation of shock interference phenomena. David H. Crawford (AIAA J, TN) 1590
- Optimum stage weight distribution of multistage rockets. James A. Martin (AIAA J, TC) 255

LV/M Dynamics and Control

- Full control of solid propellant rockets by secondary injection. I. Zeierman and Y. Manheimer-Timnat (JSR, SYN) 161
Computerized optimal control system design for boost vehicles. Wolfgang Trautwein and John M. Livingston (JSR) 227
Perturbation methods in atmospheric flight mechanics. Peter H. Zipfel (AIAA J) 1247
A universal three-angle basis for rotational kinematic analysis, simulation and control. James Nohl Churchyard (JSR, ERR) 480

LV/M Dynamics, Uncontrolled

- Evaluation of aerodynamic derivatives from a magnetic balance system. Boray S. Raghunath and Hermon M. Parker (AIAA J, SYN) 897
Experimental correlation between the flow and Magnus characteristics of a spinning ogive-nose cylinder. James M. Martin and Charles W. Ingram (AIAA J, SYN) 901
Verification of ground test data by instrumented flight test of an artillery shell. Stanley D. Kahn, Vural Oskay and John Whiteside (JA) 143
Experimental determination of asymmetry-induced trim angles of attack. Edward L. Clark Jr. and Albert E. Hodapp Jr. (JSR) 322
A method for obtaining aerodynamic coefficients from yawsonde and radar data. Robert H. Whyte and William H. Mermagen (JSR) 384
Nonplanar tests using the wind-tunnel free-flight technique. Peter Jaffe (JSR) 435
A proposed entry vehicle dynamic model. A. A. Kirsch (JSR) 767
Synthesis of shuttle vehicle damping using substructure test results. Daniel D. Kana and Stephen Huzar (JSR) 790
Angular momentum and the aircraft-store separation problem. P. Daniels and T. A. Clare (JA, EN) 511
Exact hydroelastic solution for an ideal fluid in a hemispherical container. Robert N. Coppolino (JSR, EN) 612
Subharmonic behavior of a slightly asymmetric missile. Charles H. Murphy (AIAA J, TN) 884
Comment on "Wind-tunnel Magnus testing of a canted fin or self-rotating configuration." F. J. Regan (AIAA J, TC) 413
—Reply by author to F. J. Regan. Anders S. Platou (AIAA J, TC) 415

LV/M Fabrication

LV/M Flight Testing

- Verification of ground test data by instrumented flight test of an artillery shell. Stanley D. Kahn, Vural Oskay, and John Whiteside (JA) 143
A proposed entry vehicle dynamic model. A. A. Kirsch (JSR) 767

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

- Experimental study of the effects of low Bond number sloshing on thermal stratification. Robert J. Krane and Leroy A. Holmes (AIAA J, SYN) 1219
Vehicle-scale investigation of a fluorine jet-pump liquid hydrogen tank pressurization system. E. C. Cady and D. W. Kendle (JSR) 735
Analysis of gas flow through a multilayer insulation system. J. T. Lin (AIAA J) 995
Stresses in anisotropic nonhomogeneous cylinders. Manoranjan Maiti (AIAA J, TN) 1326

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

- Material injection alleviation during the RAM C-III flight. Lyle C. Schroeder and Norman D. Akey (JSR) 170
Optimality of proportional navigation. Eliezer Kreindler (AIAA J, TN) 878

LV/M Gust Loading and Wind Shear

- Elastic launch vehicle response to sinusoidal gusts. Lars E. Ericsson, J. Peter Reding, and Rolf A. Guenther (JSR) 244
Nonstationary ascent wind analysis. L. J. Howell, B. J. Kuchta, and R. E. Barnes (JSR) 755
Relative magnitudes of stresses caused by static and dynamic launch vehicle loads. Lars E. Ericsson, J. Peter Reding, and Rolf A. Guenther (JSR, EN) 276

LV/M Mission Studies and Economics

- Optimum stage weight distribution of multistage rockets. James A. Martin (AIAA J, TC) 255

LV/M Propulsion System Integration

LV/M Simulation

- Solution of highly constrained optimal control problems using nonlinear programming. Richard G. Brusch and Robert H. Schappelle (AIAA J, SYN) 135

- Support wire disturbances in near viscous wakes of slender supersonic bodies. Kenneth A. Mirly and B. P. Selberg (JSR, EN) 474
Determination of rocket ignition induced silo transient pressures using an expansion tube. Michael J. Wayte and Fredric A. Gruenich (JSR, EN) 602

LV/M Structural Design (including loads)

- Computerized optimal control system design for boost vehicles. Wolfgang Trautwein and John M. Livingston (JSR) 227
Stresses in anisotropic nonhomogeneous cylinders. Manoranjan Maiti (AIAA J, TN) 1326

LV/M Subsystem Design

- Calculation of forces on stores in the vicinity of aircraft. Hyman Serbin (JA, EN) 123

LV/M System and Component Ground Testing

- Laser activated, model surface recession compensator system for testing ablative materials. Ronald A. Williamson, W. A. Rinehart, and Ronald R. Williams (JSR, EN) 684

LV/M Trajectories

- Solution of highly constrained optimal control problems using nonlinear programming. Richard G. Brusch and Robert H. Schappelle (AIAA J, SYN) 135
Minimum fuel rocket maneuvers in horizontal flight. N. X. Vinh (AIAA J) 165
A method for obtaining aerodynamic coefficients from yawsonde and radar data. Robert H. Whyte and William H. Mermagen (JSR) 384
Integrals of the motion for optimal trajectories in atmospheric flight. Nguyen X. Vinh (AIAA J) 700
A crude-search Davidon-type technique with application to shuttle optimization. William F. Powers (JSR) 710
An application of Kalman techniques to aircraft and missile radar tracking. G. T. Aldrich and W. B. Krabill (AIAA J) 932
A method of numerical integration for trajectories with variational equations. W. H. Goodyear (AIAA J) 1732
Optimum stage weight distribution of multistage rockets. James A. Martin (AIAA J, TC) 255

Launch Vehicle Systems (including Ground Support)

- New space transportation systems. J. Preston Layton and Jerry Grey (A/A, February) 12
Advanced technology and the space shuttle. Eugene S. Love (von Karman Lecture-A/A, February) 30
Short guide to Titan III launch vehicles. Gerald W. Driggers (A/A, February) 68
Flow areas for series-parallel compartment venting to satisfy pressure differential requirements. Cecil E. Kirby and George W. Ivy (JSR, EN) 350

Missile Systems

- A space and missile test center of the future. Louis Kraff Jr. (A/A, June) 64
Optimal stochastic guidance laws for tactical missiles. John J. Deyst Jr. and Charles F. Price (JSR) 301
Direct statistical analysis of nonlinear systems: CADET. A. Gelb and R. S. Warren (AIAA J) 689
Reachable sets analysis—An efficient technique for performing missile/sensor tradeoff studies. David M. Salmon and Walter Heine (AIAA J) 927
Mass properties of sphere-cone entry vehicles. William J. Bootle (JSR, EN) 815

Sounding Rocket Systems

- A fluidic sounding rocket motor ignition system. V. P. Marchese, E. L. Rakowsky, and L. J. Bement (JSR) 731

Tracking Systems

- Optimal stochastic guidance laws for tactical missiles. John J. Deyst Jr. and Charles F. Price (JSR) 301

MARINE TECHNOLOGY

Marine Electric Power Systems

Marine Hydrodynamics, Vessel and Control Surface

- Reflections on designing advanced marine vehicles. Robert A. Frosch (A/A, January) 50
Bottom depth effects on regular surface waves due to a submerged