Gravity effect on capillary limit in a miniature loop heat pipe with multiple evaporators and multiple condensers  p. 3
Spacecraft thermal management using advanced hybrid two-phase loop technology  p. 11
Fabrication and testing of a passive re-deployable radiator for autonomous thermal control  p. 19
Lunar dust on heat rejection system surfaces: problems and prospects  p. 27
Thermal considerations for designing the next lunar lander  p. 35
Thermal control architecture for planetary and lunar surface exploration micro-robots  p. 43
Variable emittance electrochromic devices for satellite thermal control  p. 51
Performance results of the ESR from the space technology 5 satellites  p. 59
A space-based experiment to evaluate performance of electrostatic switched radiator (ESR)  p. 66
MEMS shutters for thermal control - flight validation and lessons learned  p. 73
Optimized design and testing of a graphite-fiber reinforced composite heat pipe radiator with tapered fins  p. 81
High performance titanium-water heat pipes for high temperature applications  p. 90
Influence of the Coulomb force on spray cooling  p. 100
Spray cooling modeling: liquid film thickness effect on heat transfer  p. 110
Mathematical model of two-phase flow in advanced micro cooling modules incorporating flow pattern phenomena  p. 118
Advances in high temperature titanium-water heat pipe technology  p. 129
Intermediate temperature fluids life tests - theory  p. 137
Evaluation of metal-fueled surface reactor concepts  p. 149
Non-nuclear validation test results of a closed Brayton cycle test-loop  p. 157
Benefit of lunar regolith on reflector mass savings  p. 167
Particle-particle interaction in electromagnetic fields for force-field tailoring  p. 177
A wide range neutron detector for space nuclear reactor applications  p. 185
RTGs on transit  p. 195
Application of solar-electric propulsion to robotic missions in near-earth space  p. 205
Paris to Hektor: a concept for a mission to the Jovian Trojan asteroids  p. 217
Investigation of effects of neutron irradiation on Tantalum alloys for radioisotope power system applications  p. 224
Thermodynamic prediction of compositional phases confirmed by transmission electron microscopy on tantalum-based alloy weldments  p. 229
The effects of neutron radiation on the electrical properties of Si and SiC Schottky power diodes  p. 234
Low mass SCoRe-S designs for affordable planetary exploration  p. 242
PID control effectiveness for surface reactor concepts  p. 254
Thermal-hydraulic analyses of the submersion-subcritical safe space (S_4) reactor  p. 261
Methods for determining operation lifetime of space reactors  p. 271
Tie tube heat transfer modeling for bimodal nuclear thermal rockets  p. 281
Mars mission analysis trades based on legacy and future nuclear propulsion options  p. 289

Structural benchmark testing for stirling converter heater heads  p. 297
Palm power free-piston stirling engine control electronics  p. 305
Advanced stirling converter (ASC) phase III progress update  p. 313
Final results for the GRC supporting technology development project for the 110-watt stirling radioisotope generator (SRG110)  p. 325
A look back at assembly and test of the new horizons radioisotope power system  p. 339
Small thermoelectric radioisotope power sources  p. 347
The Europa explorer - a fresh look at exploring Europa with an RPS-powered spacecraft  p. 355

Curie-montgolfiere planetary explorers  p. 364
Titan exploration using a radioisotopically-heated montgolfier balloon  p. 372
Hot hydrogen test facility  p. 380
Application of an artificial neural tissue controller to multirobot lunar ISRU operations  p. 389
Electrostatic dust control on planetary surfaces  p. 400
High performance lightweight compact thermal radiator for space vehicles  p. 407
Thermal energy storage technology developments  p. 412
An ultra-lightweight, high performance carbon-carbon space radiator  p. 421
Experimental evaluation of the thermal performance of a water shield for a surface power reactor  p. 430
A new capability for nuclear thermal rocket propulsion design  p. 438
FRINK - a code to evaluate space reactor transients  p. 449
Recent developments in the recovery of SNAP-DYN technical data base  p. 458
New 5 kilowatt free-piston stirling space convertor developments  p. 466
Compressor and turbine models of brayton units for space nuclear power systems  p. 472
Prometheus hot leg piping concept  p. 483
Summary of NR program prometheus efforts  p. 497
Key factors influencing the decision on the number of brayton units for the prometheus space reactor  p. 522
Use of RELAP5-3D for dynamic analysis of a closed-loop brayton cycle coupled to a nuclear reactor  p. 541
Ex-core CFD analysis results for the prometheus gas reactor  p. 551
Review of helium and xenon pure component and mixture transport properties and recommendation of estimating approach for project prometheus (viscosity and thermal conductivity)  p. 559
JHU/APL breakup analysis tool (APLbat) for the new horizons radiological contingency  p. 571
Probabilities of ground impact conditions of the new horizons spacecraft and RTG for near launch pad accidents  p. 579
New horizons launch contingency effort  p. 590
Supercritical brayton cycle nuclear power system concepts  p. 597
Development of high fidelity, fuel-like thermal simulators for non-nuclear testing  p. 605
Development of advanced stirling radioisotope generator for space exploration p. 615
Multi-watt small radioisotope thermoelectric generator conceptual design study p. 624
NASA'S RPS design reference mission set for solar system exploration p. 631
Creep property characterization of potential brayton cycle impeller and duct materials p. 640
Post irradiation evaluation of thermal control coatings and solid lubricants to support fission surface power systems p. 652
High temperature stability of dissimilar metal joints in fission surface power systems p. 660
Gas foil bearing technology advancements for closed Brayton cycle turbines p. 668
Thermal performance of high temperature titanium - water heat pipes by multiple heat pipe manufacturers p. 681
Operational results from a high power alternator test bed p. 692
The making of a lunar outpost - exploring a future case study p. 703
Extreme mobility : next generation tetrahedral rovers p. 711
Exploration challenges : transferring ground repair techniques to space flight application p. 719
Layered metals fabrication technology development for support of lunar exploration at NASA/MSFC p. 728
Friction stir welded thin wall cryogenic tank skins p. 736
Micro-inspector spacecraft testbed : breadboard subsystem demonstrations p. 742
Novel rock detection intelligence for space exploration based on non-symbolic algorithms and concepts p. 760
Where space comes down to earth : test facilities for exploration systems p. 769
Centaur application to robotic and crewed lunar lander evolution p. 779
Nanoparticle electric propulsion for space exploration p. 787
MIC : magnetically deployable structures for power, propulsion, processing, habitats and energy storage at manned lunar basas p. 795
Moon bases as initial "space society" trials : utilizing astrosociology to make space settlements livable p. 806
What will we actually do on the moon? p. 814
Development of an integrated RVC - LWRD system for RESOLVE p. 823
Microwave extraction of water from lunar regolith simulant p. 830
Drilling results in ice-bound simulated lunar Regolith p. 838
Vacuum pyrolysis and related ISRU techniques p. 846
Percussive penetration of unconsolidated granular media in a laboratory setting p. 854
Martian liquid CO\text{2} and metabolic heat regenerated temperature swing adsorption for portable life support systems p. 863
Lunar in situ materials-based surface structure technology development efforts at NASA/MSFC p. 871
Multi-MICE : nuclear powered mobile probes to explore deep interiors of the ice sheets on mars and the Jovian moons p. 878
Symbiotic relationship of man and machine in space colonization p. 888
Optimal architecture for an asteroid mining mission : system components and project execution p. 896
A minimized technological approach towards human self sufficiency off earth p. 904
The all terrain bio-nano gear for space radiation detection system  p. 911
On the possibility of a persistent mars greenhouse, or, mars and venus find something in common p. 919
The CI carbonaceous chondrites as the missing old meteorites of mars  p. 926
High-efficiency extraction and utilization of lunar solar wind volatiles  p. 933
Development of a reactor model for chemical conversion of lunar Regolith  p. 941
Tribocharging lunar simulant in vacuum for electrostatic beneficiation  p. 951
A quantitative method for evaluating regolith simulants  p. 957
Exploring gravity and gravitational wave dynamics part I: gravitational anomalies  p. 967

Revolutionary design for astronaut exploration - beyond the bio-suit system  p. 975
Inertial mass dependency on local vacuum fluctuation mean free path  p. 987
Local and system level considerations for plasma-based techniques in hypersonic flight  p. 995
The influence of high-frequency gravitational waves upon muscles  p. 1004
Modified design of novel variable-focus lens for VHFGW  p. 1011
Surveillance applications of high-frequency gravitational waves  p. 1017
Compact reactor  p. 1026
Extraction of thrust from quantum vacuum using squeezed light  p. 1034
Mach’s principle and propulsion: experimental results  p. 1045
Propulsion from electromagnetic nonlinear materials  p. 1055
Mach-lorentz thruster spacecraft applications  p. 1063
Measurement of Gravitomagnetic and acceleration fields around rotating superconductors  p. 1071
The value estimation of an HFGW frequency time standard for telecommunications network optimization  p. 1083
Alternate communications for space travel  p. 1091
FTL quantum models of the photon and the electron  p. 1099
Progress on the GEMS (gravity electro-magnetism-strong) theory of field unification and its application to space problems  p. 1109
Hyperspace for space travel  p. 1117
Fluid dynamic simulations of warp drive flight through negative pressure zero-point vacuum  p. 1125
Can the present technology create gross amounts of negative energy density?  p. 1132
Coupling of an open cavity to microwave beam: a possible new scheme for detecting high-frequency gravitational waves  p. 1139
CasimirSim - a tool to compute casimir polder forces for nontrivial 3D geometries  p. 1148
High-frequency gravitational wave induced nuclear fusion  p. 1156
Supersymmetry breaking casimir warp drive  p. 1163
How a randall-sundrum brane-world effective potential influences inflation physics  p. 1170
Towards a self-consistent and controllable graviton flux  p. 1181
The connection between inertial forces and the vector potential  p. 1189
Exploring gravity and gravitational wave dynamics part II: gravity models  p. 1201
The schwarzschild metric violates the weak principle of equivalence  p. 1208
Electrostatic 512kV rotator/oscillator propulsion system  p. 1216

Table of Contents provided by Blackwell's Book Services and R.R. Bowker. Used with permission.