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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Antenna Arraying Techniques in the Deep Space Network; Table of Contents; Foreword; Preface; Acknowledgments; Chapter 1: Introduction; 1.1 Benefits of Arraying; 1.1.1 Performance Benefits; 1.1.2 Operability Benefits; 1.1.3 Cost Benefits; 1.1.4 Flexibility Benefits; 1.1.5 Science Benefits; References; Chapter 2: Background of Arraying in the Deep Space Network; 2.1 Early Development; 2.2 Current Status of Development; 2.3 Anticipated Applications with Current Capabilities; References; Chapter 3: Arraying Concepts; 3.1 An Array as an Interferometer; 3.2 Detectability 3.3 Gain Limits for an Antenna and Array3.4 System Temperature; 3.5 Reliability and Availability; References; Chapter 4: Overview of Arraying Techniques; 4.1 Full-Spectrum Combining (FSC); 4.2 Complex-Symbol Combining (CSC); 4.3 Symbol-Stream Combining (SSC); 4.4 Baseband Combining (BC); 4.5 Carrier Arraying (CA); References; Chapter 5: Single-Receiver Performance; 5.1 Basic Equations; 5.2 Degradation and Loss; References; Chapter 6: Arraying Techniques; 6.1 Full-Spectrum Combining (FSC); 6.1.1 Telemetry Performance; 6.2 Complex-Symbol Combining (CSC); 6.2.1 Telemetry Performance 6.3 Symbol-Stream Combining (SSC)6.4 Baseband Combining (BC); 6.5 Carrier Arraying (CA); 6.5.1 Baseband Carrier-Arraying Scheme; 6.5.2 IF Carrier-Arraying Scheme; References; Chapter 7: Arraying Combinations and Comparisons; 7.1 Arraying Combinations; 7.2 Numerical Examples; 7.2.1 Pioneer 10; 7.2.2 Voyager II; 7.2.3 Magellan; 7.2.4 Galileo; 7.3 Conclusions; Reference; Chapter 8: Correlation Algorithms; 8.1 General; 8.2 Simple; 8.3 Sumple; 8.4 Eigen; 8.5 Least-Squares; 8.6 Simulations; References; Chapter 9: Current Arraying Capability; 9.1 Equipment Description; 9.2 Signal Processing 9.2.1 Correlation9.2.2 Delay Compensation; 9.2.3 Combining; 9.3 Results; 9.3.1 Telemetry Array Gain; 9.3.2 Radio Metric Array Gain; References; Chapter 10: Future Development; 10.1 The Square Kilometer Array; 10.2 The Allen Telescope Array; 10.3 The DSN Large Array; 10.3.1 Correlation; 10.3.2 Monitor and Control; 10.3.3 Signal Distribution; 10.3.4 Maintenance; 10.3.5 Data Routing; 10.4 The Uplink Array; 10.4.1 Electronic Stability; 10.4.2 Tropospheric Variation; 10.5 Software Combiner; 10.6 Final Remarks; References; Appendix A: Antenna Location; Appendix B: Array Availability Appendix C: Demodulation ProcessC.1 Signal Model; C.2 Carrier Demodulation; C.3 Subcarrier Demodulation; C.4 Symbol Demodulation; Appendix D: Gamma Factors for DSN Antennas; Appendix E: Closed-Loop Performance; Appendix F: Subcarrier and Symbol-Loop SNR Performance; F.1 Subcarrier I- and IQ-Loops; F.2 Digital Data-Transition Tracking I- and IQ-Loops; Appendix G: Derivation of Equations for Complex-Symbol Combining; G.1 Derivation of Eq . (6.2-5); G.2 Derivation of Eq . (6.2-11); General Reference List; Acronyms and Abbreviations
Sommario/riassunto	An introduction to antenna Arraying in the Deep Space networkAntenna arraying is the combining of the output from several antennas in order to improve the signal-to-noise ratio (SNR) of the received signal. Now implemented at the Goldstone Complex and other Deep Space Network (DSN) overseas facilities, antenna arraying provides flexible use of multiple antennas to increase data rates and has enabled NASA's DSN

to extend the missions of some spacecraft beyond their planned lifetimes. Antenna Arraying Techniques in the Deep Space Network introduces the development and use of anten
