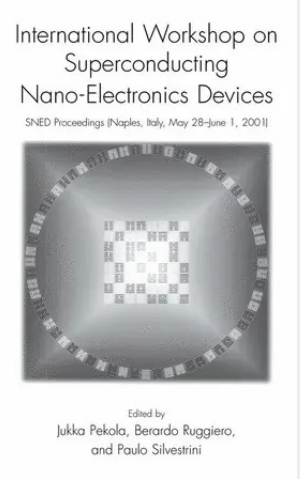
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furtherguaranteedtheparticipantsastimulatingatmosphereatthemeeting. Inconclusion,wewishtothankthelstitutoItalianopergliStudiFilosofici,thelstituto diCiberneticadelConsiglioNazionaledelleRicerche,theUniversityofJyviiskylii,the IstitutoNazionalediFisicaNucleare,thelstitutoNazionalediFisicadellaMateria,the DipartimentoScienzeFisiche,andtheRettoratodell'UniversitadiNapoli"FedericoII" fortheirsupport. ThanksarealsoduetoAirLiquide,CRY,Nanoway,OxfordInstruments, andRaith. Thisinitiativeisintheframeoftheinternationalactivityof MQC2Association on"MacroscopicQuantumCoherenceandComputing. "Weareindebtedto C. Granata v vi PREFACE and V. Coratoforscientificassistance,andtoF. Caiazzo,E. DeGrazia,andA. M. Mazzarellafortheirvaluableassistanceinallthetasksconnectedtotheorganizationofthe Workshop. Wearealsogratefultol. Longobardi,A. Monaco,S. Piscitelli,andS. Rombetto forhintsandhelpduringtheWorkshop. ThanksareduetoL. DeFelice,S. Luongo,and V. Sindonifortheorganizationofthesocialevent. J. Pekola B. Ruggiero P. Silvestrini CONTENTS QuantumNondemolitionMeasurementsofaQubit. D. V. Averin BayesianQuantumMeasurementofaSingle-Cooper-PairQubit 11 A. Korotkov IlfNoiseinJosephsonQubits 15 E. Paladino, L. Faoro,G. Falci,and R. Fazio SwitchingCurrentsandQuasi-ParticlePoisoningintheSuperconducting SingleElectronTransistor 25 P. Agren,J. Walter,V. Sch611mann,andD. B. Haviland JosephsonSystemsforQuantumCoherenceExperiments 33 V. Corato,C. Granata, L. Longobardi,M. Russo,B. Ruggiero, andP. Silvestrini SolidStateAnalogueofDoubleSlitInterferometer. 43 K. Yu. Arutyunov, T. T. Hongisto,andJ. P. Pekola NoiseandMicrowavePropertiesofSET-Transistors. 53 M. Ejrnres,M. T. Savolainen,andJ. Mygind UseofSmallThnnelJunctionsOperatingatT=0. 3K 63 R. Leoni,M. G. Castellano,F. Chiarello,andG. Torrioli AHystericSingleCooperPairTransistorforSingleShotReadingof 73 aCharge-Qubit A. Cottet,D. Vion,P. Joyez,D. Esteve,andM. H. Devoret SingleCooperPairElectrometerBasedonaRadio-Frequency-SQUID Scheme 87 A. B. Zorin vii viii CONTENTS PossibilityofSingle-ElectronDevicesandSuperconductingCoherence 97 Yu. A. Pashkin, Y. Nakamura,T. Yamamoto,andJ. S. Tsai Frequency-LockedCurrentofCooperPairsinSuperconductingSingle ElectronTransistorwithOhmicResistor. 105 S. V. Lotkhov,S. A. Bogoslovsky, A. B. Zorin,andJ. Niemeyer SetupforExperimentsontheSupercurrent-PhaseRelationinBloch Transistors-StatusandPossibleApplications 115 M. Gotz, V. V. Khanin, A. B. Zorin,E. Il'ichev,S. A. Bogoslovsky, andJ. Niemeyer Single-ElectronTransistorsintheRegimeofHighConductance. 123 C. Wallisser,B;Limblach,P. yomStein,and R. Schiifer SuperconductingTransistor-EdgeSensorsforTime&EnergyResolved Single-PhotonCountersandforDarkMatterSearches 133 B. Cabrera OptimizationoftheHot-ElectronBolometerandaCascadeQuasiparticle 145 L. Kuzrnin NoiseinRefrigeratingTunnelJunctionsandinMicrobolometers. 153 D. V. Anghel NonequilibriumQuasiparticlesandElectronCoolingbyNormalMetal SuperconductorTunnelJunctions. 165 D. Golubevand A. Vasenko MesoscopicJosephsonJunctionsCoupledtoWeakCoherentFields: AnExampleofReciprocalDetection 175 R. Miglioreand A. Messina DynamicsofSuperconductingInterferometersContainingPi-Junctions 183 V. K. Kornev, I. I. Soloviev, I. V. Borisenko,P. B. Mozhaev, andG. A.

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