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Nota di contenuto	Prologue: -rays from star-forming regions, a historical perspective -- Cosmic rays in the interstellar medium -- The influence of cosmic rays in the circumnuclear molecular gas of NGC1068 -- Star Formation in the Milky Way: The Infrared View -- The initial conditions of star formation: cosmic rays as the fundamental Regulators -- Cosmic-ray propagation in molecular clouds -- Distribution of Cosmic-Ray Ionization Rates in the Galactic Diffuse Interstellar Medium as Inferred from Observations of H+3, OH+, and H2O+ -- Consequences of Starbursts for the Interstellar and Intergalactic Medium -- Stellar Populations in the Galactic Center -- The cosmic-ray dominated region of protoplanetary disks -- The central regions of local (U)LIRGs viewed with big radio eyes -- Evidence of nuclear disks from the radial distribution of CCSNe in starburst galaxies -- GeV gamma-ray emission from normal and starburst galaxies -- High Energy Emission from Star-Forming Galaxies -- Cosmic ray acceleration in W51C observed with the MAGIC telescopes -- Cosmic rays and molecular clouds -- Molecular and atomic gas in the young TeV -ray SNRs RX J1713.73946 and RX J0852.04622; evidence for the hadronic production of -rays -- New insights on hadron acceleration at

supernova remnant shocks -- Cosmic rays in the Orion Bar -- The FIR-Radio Correlation in Rapidly Star-Forming Galaxies: The Spectral Index Problem & Proton Calorimetry -- A possible GeV-radio correlation for starburst galaxies -- Shock acceleration of relativistic particles in galaxy collisions -- Gamma-rays and neutrinos from dense environments of massive binary Systems -- Cosmic-ray-induced ionization in molecular clouds adjacent to supernova remnants -- The Consequences of the Interaction of Cosmic Rays with Galactic Center Molecular Clouds -- Traces of past activity in the Galactic Centre -- Fermi Bubble: Giant gamma-ray bubbles in the Milky Way -- The Fermi Bubbles and Galactic Centre Star Formation -- From 10 Kelvin to 10 TeraKelvin:Insights on the Interaction Between Cosmic Rays and Gas in Starbursts -- Cosmic ray driven dynamo in spiral galaxies -- Nonthermal X-rays from Low-Energy Cosmic Rays in the Arches Cluster Region -- The High Altitude Water Cerenkov (HAWC) TeV gamma ray Observatory.

Sommario/riassunto

These are the proceedings of the Sant Cugat Forum 2nd Workshop on Cosmic-ray Induced Phenomenology in Stellar Environments, held April 16-19, 2012. The aim of this Workshop was to address the current knowledge and challenges of high-energy emission from stellar environments at all scales and provide a comprehensive review of the state of the field from the observational to the theoretical perspectives. In the meeting, the prospects for possible observations with planned instruments across the multi-wavelength spectrum were analyzed and also how they impact on our understanding of these systems.