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The Jet Stream Jet Quenching in Relativistic Heavy Ion Collisions at the LHC Study of Double Parton Scattering Using Four-Jet Scenarios Heat and Blast Effects of Current-type Jet Aircraft on Airfield Pavements Data Technical Report - Jet Propulsion Laboratory, California Institute of Technology Performance of the Jet Transport Airplane Advances in Jet Substructure at the LHC Waterworks Handbook Search for Exotic Mono-jet Events Considerations on a Large Hydraulic Jet Catapult Jet physics in ALICE Search for New Physics in $t\bar{t}$ Final States with Additional Heavy-Flavor Jets with the ATLAS Detector Principles of Abrasive Water Jet Machining Waterworks Handbook Statistical Presentation of Operational Landing Parameters for Transport Jet Airplanes A Review of Water-jet-assisted Rock Cutting Motor Age Multiple Parton Interactions at the LHC Proceedings of the Institution of Electrical Engineers Visualization of Conventional and Combusting Subsonic Jet Instabilities Airlines of the Jet Age Proceedings of the ASME Turbo Expo ... NASA Conference Publication Municipal Record The Journal of the Institution of Electrical Engineers U.S. Strategic Bombing Survey: Powder, Explosives, Special Rockets and Jet Propellants, War Gases and Smoke Acid Longitudinal and Lateral

Stability Characteristics of Two Four-jet VTOL Models in the Transition Speed Range Longitudinal and Lateral Stability Characteristics of Two Four-jet Vtol Models in the Transition Speed Range Jet, Rocket, Nuclear, Ion and Electric Propulsion Jet Physics at the LHC Proceedings of the Tenth International Conference on Calorimetry in Particle Physics Bulletin - Engineering Experiment Station Searches for the Supersymmetric Partner of the Top Quark, Dark Matter and Dark Energy at the ATLAS Experiment Synthetic Jets Biennial Report of the Bureau of Labor Statistics of the State of Illinois for the Years Ending ... Erosion-Corrosion: An Introduction to Flow Induced Macro-Cell Corrosion The Chemical News and Journal of Physical Science Statistics of Coal in Illinois ... Critical Regimes of Supersonic Jet Aircraft

This thesis addresses in a very new and elegant way several measurements and the extraction of so-called double parton scattering. The new and elegant way lies in the combination of measurements and a very smart extraction of double parton scattering results, which is easy to apply and overcomes many of the technical difficulties of older methods. Many new phenomena in particle physics can be observed when particles are collided at the highest energies; one of the highlights in recent years was the discovery of the Higgs boson at the Large Hadron Collider at CERN. Understanding the production mechanism of the Higgs boson at the LHC requires detailed knowledge of the physics of proton-proton collisions. When the density of partons in the protons becomes large, there is a non-negligible probability that more than one parton participates

in the interaction and the so-called double parton scattering becomes important. In some cases very particular final state signatures can be observed, which can be regarded as an indication of such double partonic scattering and where the different interactions can be separated. Such multiple partonic interactions play an important role when precise predictions from known processes are required. This book reviews the latest experimental results on jet physics from proton-proton collisons at the LHC. Jets allow to determine the strong coupling constant over a wide range of energies up the highest ones possible so far, and to constrain the gluon parton distribution of the proton, both of which are important uncertainties on theory predictions in general and for the Higgs boson in particular.A novel approach in this book is to categorize the examined quantities according to the types of absolute, ratio, or shape measurements and to explain in detail the advantages and differences. Including numerous illustrations and tables the physics message and impact of each observable is clearly elaborated. This report contains the results of phototheodolite data accumulated on 183 daylight landing operations of scheduled air carriers flying the Boeing 707, 707B, 720, 720B, Convair CV-880, and Douglas DC-8 jet airplane models. These measurements were obtained during the months of June and July 1961 at Chicago O'Hare Airport, San Francisco International Airport, Denver Stapelton Airport, and Dallas Love Field. Annotation The International Conference on Calorimetry in Particle Physics has become the major forum for state-of-the-art developments of calorimetry

techniques. The tenth conference was attended by about 150 physicists from 20 countries and covered all aspects of calorimetric particle detection and measurements, with emphasis on high energy physics experiments as well as experiments in nuclear physics and astrophysics.The proceedings contain three parts: introductory papers, contributed papers and a summary. The introductory papers start with a historical review of the development of calorimetry technology, and continue with overviews of the current status of calorimetry in high energy physics and astrophysics, which are followed by discussions on calorimetry in future accelerator facilities, such as linear colliders and the Super B Factory. A "hot" technology regarding the "energy flow concept" is also dealt with Airlines of the Jet Age provides the first comprehensive history of the world's airlines from the early 1960s to the present day. It begins with an informative introductory chapter on the infancy of flight and the development of air-transport craft used during the First and Second World Wars, and then wings into the "first" Jet Age--the advent of jet airlines. It continues through the "second" Jet Age of wide-bodied aircraft, such as the Boeing 747 and DC-10, and closes with the introduction of the "third" Jet Age, which begins with the giant double-decked Airbus A380. This reference book is an unparalelled reference for aviation buffs, covering airlines around the globe and throughout the modern eras of human flight. The last book written by renowned airline historian R.E.G. Davies, Airlines of the Jet Age is the ultimate resource for information and insight on modern air transport. This book introduces the reader to the field

of jet substructure, starting from the basic considerations for capturing decays of boosted particles in individual jets, to explaining state-of-the-art techniques. Jet substructure methods have become ubiquitous in data analyses at the LHC, with diverse applications stemming from the abundance of jets in proton-proton collisions, the presence of pileup and multiple interactions, and the need to reconstruct and identify decays of highly-Lorentz boosted particles. The last decade has seen a vast increase in our knowledge of all aspects of the field, with a proliferation of new jet substructure algorithms, calculations and measurements which are presented in this book. Recent developments and algorithms are described and put into the larger experimental context. Their usefulness and application are shown in many demonstrative examples and the phenomenological and experimental effects influencing their performance are discussed. A comprehensive overview is given of measurements and searches for new phenomena performed by the ATLAS and CMS Collaborations. This book shows the impressive versatility of jet substructure methods at the LHC. Astrophysical observations implying the existence of Dark Matter and Dark Energy, which are not described by the Standard Model (SM) of particle physics, have led to extensions of the SM predicting new particles that could be directly produced at the Large Hadron Collider (LHC) at CERN. Based on 2015 and 2016 ATLAS proton-proton collision data, this thesis presents searches for the supersymmetric partner of the top quark, for Dark Matter, and for DarkEnergy, in signatures with jets and missing transverse energy. Muon detection is

key to some of the most important LHC physics results, including the discovery of the Higgs boson and the measurement of its properties. The efficiency with which muons can be detected with the ATLAS detector is measured using Z boson decays. The performance of high-precision Monitored Drift Tube muon chambers under background rates similar to the ones expected for the High Luminosity-LHC is studied. The ALICE experiment is one of the experiments currently prepared for the Large Hadron Collider (LHC) at CERN, Geneva, starting operation end of 2007. ALICE is dedicated to the research on nucleus-nucleus collisions at ultra-relativistic energies, which addresses the properties of strongly interacting matter under varying conditions of high density and temperature. The conditions provided at the LHC allow significant qualitative improvement with respect to previous studies. In particular, energetic probes, light quarks and gluons, will be abundantly produced. These probes might be identified by their fragmentation into correlated particles, so called jets, of high enough energy to allow full reconstruction of jet properties; even in the underlying heavy-ion environment.Under standing the dependence of high-energy jet production and fragmentation influenced by the dense medium created in the collision region is an open field of active research. Generally, one expects energy loss of the probes due to medium-induced gluon radiation. It is suggested that hadronization products of these, rather soft gluons may be contained within the jet emission cone, resulting in a modification of the characteristic jet fragmentation, as observed via longitudinal and transverse

momentum distributions with respect to the direction of the initial parton, as well as of the multiplicity distributions arising from the jet fragmentation. Particle momenta parallel to the jet axis are softened (jet quenching), while transverse to it increased (transverse heating). The present thesis studies the capabilities of the ALICE detectors to measure these jets and quantifies obtainable rates and the quality of jet reconstruction, in both proton-proton and lead-lead collisions at the LHC. In particular, it is addressed whether modification of the jet fragmentation can be detected within the high-particle-multiplicity environment of central lead-lead collisions. This doctoral thesis focuses on the search for new phenomena in top-antitop quark (tt) final states with additional b-quark jets at the LHC. It uses the full Run 1 dataset collected by the ATLAS experiment in proton-proton collisions at √s=8 TeV. The final state of interest consists of an isolated lepton, a neutrino and at least six jets with at least four b-tagged jets, a challenging experimental signature owing to the large background from tt+heavy-flavor production. This final state is characteristic of ttH production, with the Higgs boson decaying into bb, a process that allows direct probing of the top-Higgs Yukawa coupling. This signature is also present in many extensions of the Standard Model that have been proposed as solutions to the hierarchy problem, such as supersymmetry or composite Higgs models, which predict the pair production of bosonic or fermionic top quark partners, or the anomalous production of four-top-quark events. All these physics processes have been searched for using an ambitious

search strategy that has been developed on the basis of a combination of state-of-art theoretical predictions and a sophisticated statistical analysis to constrain in-situ the large background uncertainties. As a result, the most restrictive bounds to date on the above physics processes have been obtained. Abrasive water jet machining was introduced to manufacturing ten years ago and has been increasingly used for treating hard-to-machine and multi-layered materials and as an alternative tool for milling, turning, drilling and polishing. This is the first comprehensive review of the technique, dealing with a broad range of issues including mixing and acceleration processes, material removal mechanisms, process optimization and fluid mechanics. Explanations are given as the book follows the development of an abrasive water jet machining process, from tool generation through to machining results, supervision and control. This methodical journey through the field is marked by drawings, graphs and tables, many of which are being published here for the first time. Though the book is written at an academic level, it focuses very much on practical applications, which reflects the authors' extensive involvement with both laboratory research and industrial practices. This thesis presents the first measurements of jets in relativistic heavy ion collisions as reported by the ATLAS Collaboration. These include the first direct observation of jet quenching through the observation of a centrality-dependent dijet asymmetry. Also, a series of jet suppression measurements are presented, which provide quantitative constraints on theoretical models of jet quenching.

These results follow a detailed introduction to heavy ion physics with emphasis on the phenomenon of jet quenching and a comprehensive description of the ATLAS detector and its capabilities with regard to performing these measurements. Compiles Information from a Multitude of Sources Synthetic jets have been used in numerous applications, and are part of an emergent field. Accumulating information from hundreds of journal articles and conference papers, Synthetic Jets: Fundamentals and Applications brings together in one book the fundamentals and applications of fluidic actuators. Clearly and thoroughly explaining the mechanisms of underlying synthetic jet behavior—from aerospace to mechanical engineering—this book addresses a variety of aspects, and provides a holistic, systematic approach of the subject. Covers Fundamental Principles, Analysis Techniques, and Applications Designed as a starting point for newcomers, the book is divided into three parts: fundamentals, techniques, and applications, and focuses on a class of incompressible jet flows where the jet is made up of the surrounding fluid. It explores fluid dynamics, hydrodynamic modeling, acoustics, and fabrication. It covers key measurement techniques, computational modeling, and synthetic jet design. In addition to highlighting the concepts and applications of synthetic jets, (in particular their uses in flow control and thermal management in electronic devices), the book explores attempts to improve and accelerate the design and optimization processes (from flow control to electronic cooling and propulsion) involved in a wealth of applied

knowledge. Features prominent experts in the field Surveys the state of the art Details a pathway to future advances in the industry Synthetic Jets: Fundamentals and Applications can be used as a guidebook for researchers, graduate students, and upper-level undergraduate students. Performance of the Jet Transport Airplane: Analysis Methods, Flight Operations, and Regulations presents a detailed and comprehensive treatment of performance analysis techniques for jet transport airplanes. Uniquely, the book describes key operational and regulatory procedures and constraints that directly impact the performance of commercial airliners. Topics include: rigid body dynamics; aerodynamic fundamentals; atmospheric models (including standard and non-standard atmospheres); height scales and altimetry; distance and speed measurement; lift and drag and associated mathematical models; jet engine performance (including thrust and specific fuel consumption models); takeoff and landing performance (with airfield and operational constraints); takeoff climb and obstacle clearance; level, climbing and descending flight (including accelerated climb/descent); cruise and range (including solutions by numerical integration); payload–range; endurance and holding; maneuvering flight (including turning and pitching maneuvers); total energy concepts; trip fuel planning and estimation (including regulatory fuel reserves); en route operations and limitations (e.g. climb-speed schedules, cruise ceiling, ETOPS); cost considerations (e.g. cost index, energy cost, fuel tankering); weight, balance and trim; flight envelopes and limitations (including stall and

buffet onset speeds, V–n diagrams); environmental considerations (viz. noise and emissions); aircraft systems and airplane performance (e.g. cabin pressurization, de-/anti icing, and fuel); and performance-related regulatory requirements of the FAA (Federal Aviation Administration) and EASA (European Aviation Safety Agency). Key features: Describes methods for the analysis of the performance of jet transport airplanes during all phases of flight Presents both analytical (closed form) methods and numerical approaches Describes key FAA and EASA regulations that impact airplane performance Presents equations and examples in both SI (Système International) and USC (United States Customary) units Considers the influence of operational procedures and their impact on airplane performance Performance of the Jet Transport Airplane: Analysis Methods, Flight Operations, and Regulations provides a comprehensive treatment of the performance of modern jet transport airplanes in an operational context. It is a must-have reference for aerospace engineering students, applied researchers conducting performance-related studies, and flight operations engineers. Many high-energy collider experiments (including the current Large Hadron Collider at CERN) involve the collision of hadrons. Hadrons are composite particles consisting of partons (quarks and gluons), and this means that in any hadron–hadron collision there will typically be multiple collisions of the constituents — i.e. multiple parton interactions (MPI). Understanding the nature of the MPI is important in terms of searching for new physics in the

products of the scatters, and also in its own right to gain a greater understanding of hadron structure. This book aims at providing a pedagogical introduction and a comprehensive review of different research lines linked by an involvement of MPI phenomena. It is written by pioneers as well as young leading scientists, and reviews both experimental findings and theoretical developments, discussing also the remaining open issues. This thesis describes in detail the search for new phenomena in mono-jet final states with the ATLAS experiment at the LHC. The final state is considered the golden channel in the searches for large extra dimensions (LED) but also allows access to a very rich SUSY-related phenomenology pertaining to the production of weakly interacting massive particles (WIMPS), SUSY Dark Matter candidates, GMSB SUSY models with very light gravitino masses, as well as stop an sbottom pair production in compressed scenarios (with nearly degenerated squarks and the lightest neutralino), and also invisible Higgs searches, among others. Here, a number of these scenarios are explored. The measurements presented yield new powerful constraints on the existence of extra spatial dimensions, the pair production of WIMPs, and also provide the best limit to date on the gravitino mass. During the last decade, rapid growth of knowledge in the field of jet, rocket, nuclear, ion and electric propulsion has resulted in many advances useful to the student, engineer and scientist. The purpose for offering this course is to make available to them these recent advances in theory and design. Accordingly, this course is organized into seven parts: Part 1 Introduction; Part 2 Jet Propulsion; Part 3

Rocket Propulsion; Part 4 Nuclear Propulsion; Part 5 Electric and Ion Propulsion; Part 6 Theory on Combustion, Detonation and Fluid Injection; Part 7 Advanced Concepts and Mission Applications. It is written in such a way that it may easily be adopted by other universities as a textbook for a one semester senior or graduate course on the subject. In addition to the undersigned who served as the course instructor and wrote Chapter I, 2 and 3, guest lecturers included: DR. G. L. DUGGER who wrote Chapter 4 "Ram-jets and Air-Aug mented Rockets," DR. GEORGE P. SUTTON who wrote Chapter 5 "Rockets and Cooling Methods," DR . . MARTIN SUMMERFIELD who wrote Chapter 6 "Solid Propellant Rockets," DR. HOWARD S. SEIFERT who wrote Chapter 7 "Hybrid Rockets," DR. CHANDLER C. Ross who wrote Chapter 8 "Advanced Nuclear Rocket Design," MR. GEORGE H. McLAFFERTY who wrote Chapter 9 "Gaseous Nuclear Rockets," DR. S. G. FORBES who wrote Chapter 10 "Electric and Ion Propul sion," DR. R. H. BODEN who wrote Chapter 11 "Ion Propulsion," DR. "Erosion-corrosion is a generic name of degradation phenomena which occur on the chemical plant composing metallic materials under the conditions of various flowing liquids. For example, it occurs on heat transfer pipes of seawater heat exchangers (made of" Vols. for 1970-79 include an annual special issue called IEE reviews. The expected propulsive efficiency of the jet catapult is given ad the effect of a side wind on the jet trajectory is calculated. Based on new information obtained on free microjets, this book explains the latest phenomena in flame evolution in the presence of a transverse acoustic field with round and

plane propane microjet combustion. It gives an overview of recent experimental results on instability and dynamics of jets at low Reynolds numbers and provides the reader, step by step, with the milestones and recent advances in jet flow stability and combustion. Readers will also discover a clarification of the differences between top-hat and parabolic round and plane jet instability. Chapters demonstrate features of the interaction between jet and crossflow, and how experimental data testify to similarities of the perturbed flow patterns of laminar and turbulent round jets. A similar response of the jets to external acoustic oscillations is shown, as well as the peculiarities of the effect of a transverse acoustic field on downstream evolution of round and plane macro- and microjets. Basic features of round and plane, macro and micro jets' evolution affected by initial conditions at the nozzle outlet and by environmental perturbations are highlighted. Students of fluid mechanics will gain a solid foundation in hydrodynamic stability and combustion of subsonic jet flow and researchers will value the presentation of special aspects of instability and transition. The work treats both theoretical and practical facets, and it includes supplementary material such as PowerPoint multimedia notes based on results of laboratory scientific experiments.