

Commissioning and Performance of the New ALICE Inner Tracking System in the First Phase of LHC Run 3

Ivan RAMASENGA¹, for the ALICE Collaboration

¹*CERN, Geneva, Switzerland*

E-mail: ivan.ramasinga@cern.ch

(Received December 16, 2022)

ALICE is one of the four experiments at the CERN Large Hadron Collider (LHC) specifically designed to study nuclear matter at extreme conditions of temperature and pressure. The LHC Run 3 started officially in July 2022 with proton–proton (pp) collisions at a centre-of-mass energy $\sqrt{s} = 13.6$ TeV after a shutdown of more than two years to allow for the upgrade of both the accelerator and the experiments. To fulfill the requirements of the ALICE physics program for Run 3, new timing, tracking and multiplicity detectors have been installed in the ALICE central barrel both at mid- and forward rapidities, the readout electronics of the majority of the detectors has been upgraded and the ALICE Offline and Online computing farm has been completely renewed. A key detector of the apparatus is the new, ultra-light, high-resolution Inner Tracking System (ITS2) that significantly enhances the resolution on the determination of the distance of closest approach to the primary vertex, the tracking efficiency at low transverse momenta, and the read-out rate capabilities with respect to what was achieved in the LHC Run 2 with the older tracker. The new tracker consists of seven layers, azimuthally segmented into Staves, equipped with silicon Monolithic Active Pixel Sensors with a pixel size of $27 \times 29 \mu\text{m}^2$ covering a sensitive area of about 10 m^2 . A long effort allowed the construction, characterization, installation and commissioning of the ITS2 before starting Run 3. The in-pixel discriminator threshold calibration represents a challenging procedure due to the huge number of channels and it is carried out by exploiting the power of the ALICE Offline and Online farm. The detector took data for the full 2022 and its first performance results represent the second key part of this article.

KEYWORDS: LHC, ALICE, tracker, track, cluster, pixel, silicon, run, calibration, detector, alignment

1. The upgraded Inner Tracking System

To fulfill the requirements of the Run 3 physics program of the CERN Large Hadron Collider (LHC), the Inner Tracking System (ITS) of the ALICE experiment has been upgraded with seven cylindrical and concentric layers of silicon Monolithic Active Pixel Sensors (MAPS) called ALPIDE covering a total active area of about 10 m^2 [1]. The detector is divided into three Inner Layers (IL), two Middle Layers (ML) and two Outer Layers (OL) as shown in Fig. 1. The four outermost layers constitute the Outer Barrel (OB) while the three innermost layers form the Inner Barrel (IB). The main features of the upgraded ITS (simply called ITS2 in the following) compared to the ones of the older detector (called ITS1) are summarised in Table I.

The sensor, produced by TowerJazz in the $0.18 \mu\text{m}$ CMOS imaging process technology, features a pixel size of $\sim 27 \times 29 \mu\text{m}^2$ with a total of 512×1024 pixels. The main characteristics of ALPIDE are:

- (1) a n-well diode about 100 times smaller than the pixel size, leading to a small capacitance of few fF;
- (2) a fast data driven encoder [2];

First Run Three New Plays By New Writers First Run

Thirumalaisamy P.
Velavancorresponding

First Run Three New Plays By New Writers First Run:

Decoding **First Run Three New Plays By New Writers First Run**: Revealing the Captivating Potential of Verbal Expression

In a time characterized by interconnectedness and an insatiable thirst for knowledge, the captivating potential of verbal expression has emerged as a formidable force. Its ability to evoke sentiments, stimulate introspection, and incite profound transformations is genuinely awe-inspiring. Within the pages of "**First Run Three New Plays By New Writers First Run**," a mesmerizing literary creation penned with a celebrated wordsmith, readers embark on an enlightening odyssey, unraveling the intricate significance of language and its enduring affect our lives. In this appraisal, we shall explore the book's central themes, evaluate its distinctive writing style, and gauge its pervasive influence on the hearts and minds of its readership.

<http://www.pet-memorial-markers.com/results/virtual-library/Documents/guide%20to%20the%20sharks%20and%20rays%20of%20southern%20africa.pdf>

Table of Contents First Run Three New Plays By New Writers First Run

1. Understanding the eBook First Run Three New Plays By New Writers First Run
 - The Rise of Digital Reading First Run Three New Plays By New Writers First Run
 - Advantages of eBooks Over Traditional Books
2. Identifying First Run Three New Plays By New Writers First Run
 - Exploring Different Genres
 - Considering Fiction vs. Non-Fiction
 - Determining Your Reading Goals
3. Choosing the Right eBook Platform
 - Popular eBook Platforms
 - Features to Look for in an First Run Three New Plays By New Writers First Run
 - User-Friendly Interface
4. Exploring eBook Recommendations from First Run Three New Plays By New Writers First Run
 - Personalized Recommendations

- First Run Three New Plays By New Writers First Run User Reviews and Ratings
- First Run Three New Plays By New Writers First Run and Bestseller Lists
- 5. Accessing First Run Three New Plays By New Writers First Run Free and Paid eBooks
 - First Run Three New Plays By New Writers First Run Public Domain eBooks
 - First Run Three New Plays By New Writers First Run eBook Subscription Services
 - First Run Three New Plays By New Writers First Run Budget-Friendly Options
- 6. Navigating First Run Three New Plays By New Writers First Run eBook Formats
 - ePub, PDF, MOBI, and More
 - First Run Three New Plays By New Writers First Run Compatibility with Devices
 - First Run Three New Plays By New Writers First Run Enhanced eBook Features
- 7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of First Run Three New Plays By New Writers First Run
 - Highlighting and Note-Taking First Run Three New Plays By New Writers First Run
 - Interactive Elements First Run Three New Plays By New Writers First Run
- 8. Staying Engaged with First Run Three New Plays By New Writers First Run
 - Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers First Run Three New Plays By New Writers First Run
- 9. Balancing eBooks and Physical Books First Run Three New Plays By New Writers First Run
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection First Run Three New Plays By New Writers First Run
- 10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
- 11. Cultivating a Reading Routine First Run Three New Plays By New Writers First Run
 - Setting Reading Goals First Run Three New Plays By New Writers First Run
 - Carving Out Dedicated Reading Time
- 12. Sourcing Reliable Information of First Run Three New Plays By New Writers First Run
 - Fact-Checking eBook Content of First Run Three New Plays By New Writers First Run

- Distinguishing Credible Sources
- 13. Promoting Lifelong Learning
 - Utilizing eBooks for Skill Development
 - Exploring Educational eBooks
- 14. Embracing eBook Trends
 - Integration of Multimedia Elements
 - Interactive and Gamified eBooks

First Run Three New Plays By New Writers First Run Introduction

In today's digital age, the availability of First Run Three New Plays By New Writers First Run books and manuals for download has revolutionized the way we access information. Gone are the days of physically flipping through pages and carrying heavy textbooks or manuals. With just a few clicks, we can now access a wealth of knowledge from the comfort of our own homes or on the go. This article will explore the advantages of First Run Three New Plays By New Writers First Run books and manuals for download, along with some popular platforms that offer these resources. One of the significant advantages of First Run Three New Plays By New Writers First Run books and manuals for download is the cost-saving aspect. Traditional books and manuals can be costly, especially if you need to purchase several of them for educational or professional purposes. By accessing First Run Three New Plays By New Writers First Run versions, you eliminate the need to spend money on physical copies. This not only saves you money but also reduces the environmental impact associated with book production and transportation. Furthermore, First Run Three New Plays By New Writers First Run books and manuals for download are incredibly convenient. With just a computer or smartphone and an internet connection, you can access a vast library of resources on any subject imaginable. Whether you're a student looking for textbooks, a professional seeking industry-specific manuals, or someone interested in self-improvement, these digital resources provide an efficient and accessible means of acquiring knowledge. Moreover, PDF books and manuals offer a range of benefits compared to other digital formats. PDF files are designed to retain their formatting regardless of the device used to open them. This ensures that the content appears exactly as intended by the author, with no loss of formatting or missing graphics. Additionally, PDF files can be easily annotated, bookmarked, and searched for specific terms, making them highly practical for studying or referencing. When it comes to accessing First Run Three New Plays By New Writers First Run books and manuals, several platforms offer an extensive collection of resources. One such platform is Project Gutenberg, a nonprofit organization that provides over 60,000 free eBooks. These books are primarily in the public domain, meaning they can be freely distributed and downloaded. Project Gutenberg offers a wide range of classic literature, making it an excellent resource for literature

enthusiasts. Another popular platform for First Run Three New Plays By New Writers First Run books and manuals is Open Library. Open Library is an initiative of the Internet Archive, a non-profit organization dedicated to digitizing cultural artifacts and making them accessible to the public. Open Library hosts millions of books, including both public domain works and contemporary titles. It also allows users to borrow digital copies of certain books for a limited period, similar to a library lending system. Additionally, many universities and educational institutions have their own digital libraries that provide free access to PDF books and manuals. These libraries often offer academic texts, research papers, and technical manuals, making them invaluable resources for students and researchers. Some notable examples include MIT OpenCourseWare, which offers free access to course materials from the Massachusetts Institute of Technology, and the Digital Public Library of America, which provides a vast collection of digitized books and historical documents. In conclusion, First Run Three New Plays By New Writers First Run books and manuals for download have transformed the way we access information. They provide a cost-effective and convenient means of acquiring knowledge, offering the ability to access a vast library of resources at our fingertips. With platforms like Project Gutenberg, Open Library, and various digital libraries offered by educational institutions, we have access to an ever-expanding collection of books and manuals. Whether for educational, professional, or personal purposes, these digital resources serve as valuable tools for continuous learning and self-improvement. So why not take advantage of the vast world of First Run Three New Plays By New Writers First Run books and manuals for download and embark on your journey of knowledge?

FAQs About First Run Three New Plays By New Writers First Run Books

1. Where can I buy First Run Three New Plays By New Writers First Run books? Bookstores: Physical bookstores like Barnes & Noble, Waterstones, and independent local stores. Online Retailers: Amazon, Book Depository, and various online bookstores offer a wide range of books in physical and digital formats.
2. What are the different book formats available? Hardcover: Sturdy and durable, usually more expensive. Paperback: Cheaper, lighter, and more portable than hardcovers. E-books: Digital books available for e-readers like Kindle or software like Apple Books, Kindle, and Google Play Books.
3. How do I choose a First Run Three New Plays By New Writers First Run book to read? Genres: Consider the genre you enjoy (fiction, non-fiction, mystery, sci-fi, etc.). Recommendations: Ask friends, join book clubs, or explore online reviews and recommendations. Author: If you like a particular author, you might enjoy more of their work.
4. How do I take care of First Run Three New Plays By New Writers First Run books? Storage: Keep them away from

direct sunlight and in a dry environment. Handling: Avoid folding pages, use bookmarks, and handle them with clean hands. Cleaning: Gently dust the covers and pages occasionally.

5. Can I borrow books without buying them? Public Libraries: Local libraries offer a wide range of books for borrowing. Book Swaps: Community book exchanges or online platforms where people exchange books.
6. How can I track my reading progress or manage my book collection? Book Tracking Apps: Goodreads, LibraryThing, and Book Catalogue are popular apps for tracking your reading progress and managing book collections. Spreadsheets: You can create your own spreadsheet to track books read, ratings, and other details.
7. What are First Run Three New Plays By New Writers First Run audiobooks, and where can I find them? Audiobooks: Audio recordings of books, perfect for listening while commuting or multitasking. Platforms: Audible, LibriVox, and Google Play Books offer a wide selection of audiobooks.
8. How do I support authors or the book industry? Buy Books: Purchase books from authors or independent bookstores. Reviews: Leave reviews on platforms like Goodreads or Amazon. Promotion: Share your favorite books on social media or recommend them to friends.
9. Are there book clubs or reading communities I can join? Local Clubs: Check for local book clubs in libraries or community centers. Online Communities: Platforms like Goodreads have virtual book clubs and discussion groups.
10. Can I read First Run Three New Plays By New Writers First Run books for free? Public Domain Books: Many classic books are available for free as they're in the public domain. Free E-books: Some websites offer free e-books legally, like Project Gutenberg or Open Library.

Find First Run Three New Plays By New Writers First Run :

[guide to the sharks and rays of southern africa](#)

[gullivers travels to lilliput and brobdingnag](#)

[guided tour of john stuart mills utilitarianism](#)

[gull force survival and leadership in captivity 1941-1945](#)

[guns of the gunfighters.](#)

[guided tour of the internet](#)

[gun hawk atlantic large print series](#)

[guns of world war two](#)

[guide to the old testament and apocrypha all about the bible bk 2](#)

guns of wyoming atlantic large print series

guide to the continental divide trail volume 5 southern colorado

gurps hightech weapons and equipment through the ages gurps generic

guitar highway rose

guide to the vineyards of the cotes du rhone

guide to the cruise vacation

First Run Three New Plays By New Writers First Run :

Key to Vocab Lessons.pdf Wordly Wise 3000 Book 7 Student Book Answer Key. 3. Page 4. Lesson 3. 3A Finding Meanings p. 23. 1. b-c 5. c-b. 8. d-a. 2. d-a. 6. a-d. 9. a-d. 3. d-a. 7. a-d. Wordly Wise, Grade 7 - Key | PDF PNONawN Wordly Wise 3000 « Student Book Answer Key 7 7 10. The claims are not plausible. 11. The evidence would have to be conclusive. 12. People would ... Wordly Wise 3000 Book 7 & Answer Key It is scheduled as optional in the Language Arts H Instructor's Guide. ... Consumable. Introduces students to 300 vocabulary words. Students learn the meaning and ... Wordly Wise 4th Edition Book 7 Answer Key... www.ebsbooks.ca Wordly Wise 3000 Answer Key Full PDF Grade 11." Wordly Wise 3000 Book 7 AK 2012-04-09 3rd Edition This answer key accompanies the sold- separately Wordly Wise 3000, Book 10, 3rd Edition. WebAug ... Wordly Wise 3000 Book 7: Systematic Academic ... Our resource for Wordly Wise 3000 Book 7: Systematic Academic Vocabulary Development includes answers to chapter exercises, as well as detailed information to ... Wordly Wise 3000 Book 7 - Answer Key Detailed Description The 12-page key to Wordly Wise 3000, Book 7 contains the answers to the exercises. Author: Kenneth Hodkinson Grade: 10 Pages: 12, ... Wordly Wise 3000 book 7 lesson 1 answers Flashcards Study with Quizlet and memorize flashcards containing terms like 1A: 1., 2., 3. and more. Wordly Wise 3000 (4th Edition) Grade 7 Key The Wordly Wise 3000 (4th edition) Grade 7 Answer Key provides the answers to the lesson in the Wordly Wise, 4th edition, Grade 7 student book. Weather Studies Investigation Manual 2013 2014 Answers ... Weather Studies Investigation Manual 2013 2014 Answers Pdf. INTRODUCTION Weather Studies Investigation Manual 2013 2014 Answers Pdf .pdf. Investigations Manual Academic Year 2013 - 2014 and ... Find all the study resources for Weather Studies - Investigations Manual Academic Year 2013 - 2014 and Summer 2014 by American Meteorological Society. I'm currently taking Weather Studies Introduction Apr 14, 2014 — I'm currently taking Weather Studies Introduction to Atmospheric. I've completed the assignment in weather studies Investigation Manual. 2013- ... Crime Scene Investigation: A Guide for Law Enforcement Investigators should approach the crime scene investigation as if it will be their only opportunity to preserve and recover these physical clues. They should ... SAFETY INVESTIGATION MANUAL This manual includes checklists and analysis procedures suitable for a variety of field and office safety investigations and assessments. This manual also ... ANSWERS

*Please note: questions without answers are 'open' and designed for group or class activities. CHAPTER 1. CASE STUDY: THE KANDY CYCLE SHOP. 1 ▷ Why do you ... Alq 213 V Electronic Warfare Management Unit Terma 14 hours ago — This volume includes an overview of the origin and development of the Lockheed U-2 family of aircraft with early National Advisory Committee for ... Crime Scene Investigation Original guide developed and approved by the Technical Working Group on Crime Scene Investigation, January 2000. Updated guide developed and approved by the ... The Weather Research and Forecasting Model - AMS Journals by JG Powers · 2017 · Cited by 922 — 2013, 2014), investigate the effects of fuel moisture content and type (Coen et al. 2013), interpret wildfire case studies (Peace et al. 2015), and predict ... The Seven Synonyms for God: An analysis of the concept of ... The Seven Synonyms for God: An analysis of the concept of ... SEVEN SYNONYMS FOR GOD / The ... Eddy on page 465 of Science and Health, which reads, "God is incorporeal, divine, supreme, infinite Mind, Spirit, Soul, Principle, Life, Truth, Love." The ... 32 Synonyms & Antonyms for GOD 7 days ago — On this page you'll find 42 synonyms, antonyms, and words related to god, such as: allah, the almighty, creator, daemon, deity, and divinity. Discover Yourself through the Seven Synonyms for God Or do you see yourself as the image of God - Mind, Principle, Life, Soul, Spirit, Truth and Love? Doing so will open a brand new world to you. Realizing our ... The Seven Synonyms for God: An analysis of the concept ... The Seven Synonyms for God: An analysis of the concept of God in the Christian Science textbook [Kappeler, Max] on Amazon.com. *FREE* shipping on qualifying ... Seven Synonyms for God God is Mind, God is Soul,. God is Spirit and Principle. God is Life, God is Truth and God is Love. With every step He leads each day. God + 7 synonyms for God God + 7 synonyms for God · 1 of 7 ~ God is Mind MP3 PDF · 2 of 7 ~ God is Spirit MP3 PDF · 3 of 7 ~ God is Soul MP3 PDF · 4 of 7 ~ God is Principle MP3 PDF · 5 ... Seven synonyms and attributes for God poster Seven synonyms and attributes for God poster. Download. Share options: Facebook · Twitter · Email · WhatsApp · Christian Science. Facebook · Instagram · Giving. Seven Synonyms for God - ChristianScienceTarrytown May 19, 2017 — the SEVEN SYNONYMS for GOD. God is. . . LIFE. TRUTH. LOVE. SOUL. MIND. SPIRIT. PRINCIPLE. First Church of Christ, Scientist, Tarrytown Synonyms for God Feb 7, 2022 — Synonyms for God from Science and Health with Key to the Scriptures by Mary Baker Eddy -PRINCIPLE- "God: Divine Principle, Life, Truth, Love, ...