

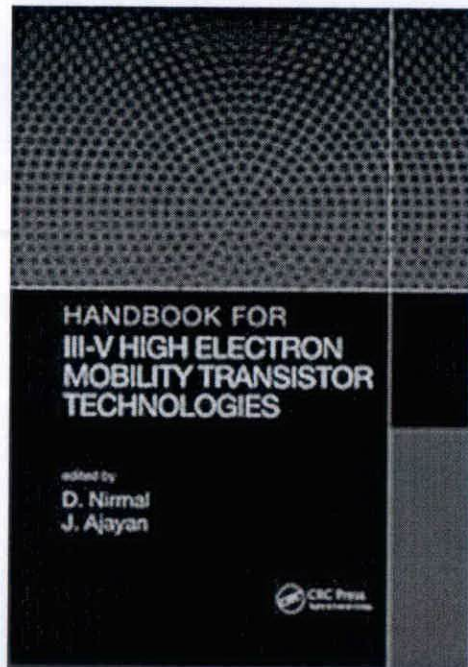


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AlGaIn/GaN HEMTs for High Power Applications

P. Prajoon and Anuja Menokey

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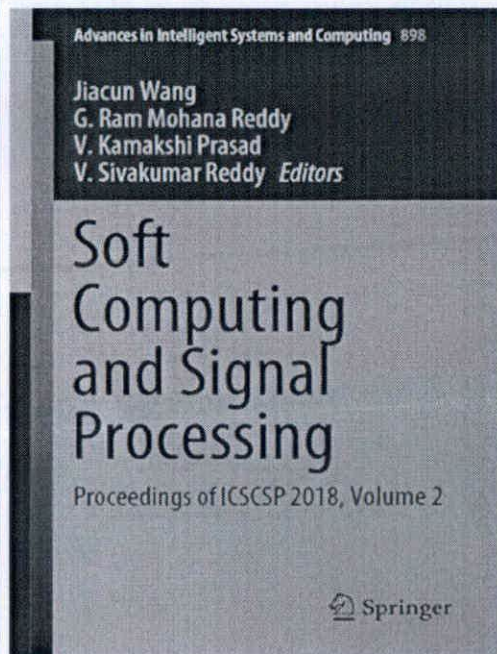
In developing advanced high-power devices, most of the research and development efforts in solid state devices and ICs are oriented towards High Electron Mobility Transistors (HEMT) and the III-V compound materials. In the past few years, the GaN-based HEMT has become an emerging device because of its high-power and high-frequency applications. This chapter demonstrates various GaN-based high-electron mobility transistor structures for high-power applications. The impact of barrier layer in the device structure especially the back-barrier layer. The DC and RF characteristics

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Authors: Authors and affiliations
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Abstract

It has become a great problem nowadays that the information contained in an IC chip is not provided with adequate security against the cunning attackers. The modern chip designs inbuilt with a design for testing (DfT) that enable testing process to become more easier, but it also acts as backdoor tool to the hackers to retrieve the sensitive data from the chip. So, in order for providing security for the information contained in the chip, we introduce a reconfigurable PUF design technique with the DfT. This security is achieved by providing a barrier against the hamming distance-based attack. In this paper, we compare the analysis of modified linear feedback shift registers (LFSRs), pseudorandom sequence generator, and physical unclonable function (PUF) in terms of randomness, hamming distance, and security. The result of comparison provides the PUF design have maximum security without affecting the testability of

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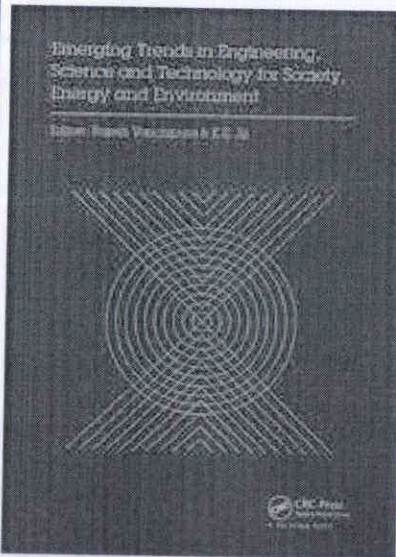
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Effect of rural highway geometry on driver workload: A step towards safety

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ABSTRACT: The research on traffic safety on highways underlines the need for maintaining consistency in the geometric design of highways. This paper focuses on driver workload and how the geometry affects driver's physiological characteristics. The work presented includes development of a device namely, the Road Driver Data Acquisition System (RDDAS). It is comprised of various sensors for capturing heart rate and galvanic skin resistance, and video cameras for capturing eye blink rate. Drivers equipped with the RDDAS were allowed to drive a vehicle with Global Positioning System through study stretches of known geometry. The effect of geometry on driver workload was explored using a scatter plot study and correlation analysis. The results indicate that heart rate and rate of eye blinking are very good indicators of driver workload. The study could be extended to develop mathematical models that can quantify the relationship between highway geometry and driver workload.

Keywords: driver workload, highway geometry, heart rate, galvanic skin resistance, rate of eye blinking

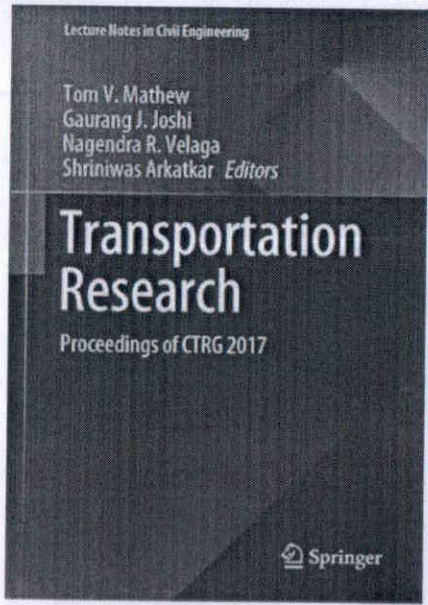
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Development of Consistency Evaluation Criteria for Indian Two-Lane Rural Highways

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Abstract. Maintaining consistency in the design of highway geometry is an effective method in controlling road crashes from the highway engineer's point of view. Among the various methods available to measure consistency of geometry, viz. operating speed, driver workload, alignment index and vehicle stability, alignment index is a method that is highly suitable for a developing country like India where financial resource is always a concern. It is an index used for quantifying how well the alignment features such as radius, curve length, rate of change of gradient etc. are coordinated with the overall alignment of the highway section. The particular measure does not require any additional data collection rather than the plan and profile of the highway. Had any criteria exist, with minimum investment, it will be possible to evaluate the consistency and subsequently safety. This paper develops a procedure for evaluating two-lane rural highway consistency and safety for Indian conditions through alignment index. Highway geometry and crash data were made use of and it was found that average radius and average curve length can be considered as the good alignment indices. Based on the crash data, criteria were developed for evaluating Indian two-lane rural highways. By using the criteria proposed in the work, planners, designers and road safety auditors can evaluate the geometric design of a highway section as Consistent or not. The output of the work further assists in selection of a plan/design among various alternatives, prioritization of rehabilitation works and in implementation of road safety management measures.

Keywords: Highway geometric design; Consistency evaluation; Alignment index; Safety evaluation criteria; Rural Highway

1 Introduction
 The goal of transportation is generally stated as the safe and efficient movement of people and goods. Safety is our primary consideration while designing a roadway. To achieve this goal, designers use many tools and techniques. One technique used to improve safety on roadways is to examine the consistency of the design. If a road is

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