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Chapter 1 : State Key Findings - California Climate Change Assessment

The problem of the existence of large sets of Kirkman triple systems (LKTS) is one of the most celebrated open problems in design theory. Only a few sparsely distributed infinite classes have been determined, although LKTS have been investigated by many authors.

Show Context Citation Context High-rate low-density parity-check LDPC codes are the focus of intense research in magnetic recording because, when decoded by the iterative sum-product algorithm, they show decoding performance close to the Shannon capacity. However, cycles, especially short cycles, are harmful to LDPC codes. Large girth leads to more efficient iterative decoding and codes with better error-floor properties than random LDPC codes. The paper details the girth and distance properties of the codes and their systematic construction and presents analytical and simulation performance results that show that, in the high signal-to-noise ratio region, PS-LDPC codes outperform random codes, alleviating the error floor phenomenon. C codes are promising in applications since they have low-complexity encoding and decoding algorithms and simplify hardware implementation. For more literature on cyclic and quasi-cyclic codes, refer to [8], [9]. However, Fossorier [7] proved that the girth of cyclic and quasi-cycli At the time, their incredible potential remained undiscovered due to the computational demands of simulation in an era when vacumm tubes were only just being replaced b This paper introduces three new classes of structured regular n, 2,k LDPC codes with girth 12, 16, and 20, respectively. These codes are systematically constructed, well structured, and have uniform row and column weights, which make them able to greatly simplify the implementation of LDPC coders. Their large girth improves their decoding performance. Abstractâ€"In distributed storage systems built using commodity hardware, it is necessary to have data redundancy in order to ensure system reliability. In such systems, it is also often desirable to be able to quickly repair storage nodes that fail. We consider a schemeâ€"introduced by El Rouayheb and We consider a schemeâ€"introduced by El Rouayheb and Ramchandranâ€"which uses combinatorial block design in order to design storage systems that enable efficient and exact node repair. In this work, we investigate systems where node sizes may be much larger than replication degrees, and explicitly provide algorithms for constructing these storage designs. Our designs, which are related to projective geometries, are based on the construction of bipartite cage graphs with girth 6 and the concept of mutually-orthogonal Latin squares. Via these constructions, we can guarantee that the resulting designs require the fewest number of storage nodes for the given parameters, and can further show that these systems can be easily expanded without need for frequent reconfiguration. This survey guides the reader through the extensive open literature that is covering the family of low-density parity-check LDPC codes and their rateless relatives. In doing so, we will identify the most important milestones that have occurred since their conception until the current era and eluci In doing so, we will identify the most important milestones that have occurred since their conception until the current era and elucidate the related design problems and their respective solutions. In our preliminary section, we have limited our discourse to binary LDPC codes, for the sak In this paper low-density parity-check LDPC codes are designed for burst erasure channels. Firstly, lower bounds for the maximum length erasure burst that can always be corrected with message-passing decoding are derived as a function of the parity-check matrix properties. We then show how parity We then show how parity-check matrices for burst erasure correcting LDPC codes can be constructed using superposition, where the burst erasure correcting performance of the resulting codes is derived as a property of the stopping set size of the base matrices and the choice of permutation matrices for the superposition. This result is then used to design both single burst erasure correcting LDPC codes which are also resilient to the presence of random erasures in the received bits and LDPC codes which can correct multiple erasure bursts in the same codeword. Here we will choose the circulant matrices to instead maximize the burst erasure correcting performance of the codes.

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The topics covered include the existence spectrums for large sets of four types of triple systems Steiner, Mendelsohn, directed and hybrid; the existence problems for large sets of Mendelsohn design, idempotent symmetric Latin squares and group divisible designs; and the existence spectrums for self-converse Mendelsohn triple systems and.

Consider the set of pulleys that form the moving block and the parts of the rope that support this block. Thus, the block and tackle reduces the input force by the factor n. A double tackle has two pulleys in both the fixed and moving blocks with four rope parts n supporting the load FB of N. The mechanical advantage is 4, requiring a force of only 25N to lift the load. Ideal mechanical advantage correlates directly with velocity ratio. The velocity ratio of a tackle is the ratio between the velocity of the hauling line to that of the hauled load. A line with a mechanical advantage of 4 has a velocity ratio of 4: In other words, to raise a load at 1 metre per second, the hauling part of the rope must be pulled at 4 metres per second. Therefore, the mechanical advantage of a double tackle is 4. Rove to dis advantage[edit] The mechanical advantage of any tackle can be increased by interchanging the fixed and moving blocks so the rope is attached to the moving block and the rope is pulled in the direction of the lifted load. In this case the block and tackle is said to be "rove to advantage. The hauling part is pulled from the moving block. The hauling part is pulled from the fixed block. Thus, the mechanical advantage is three-to-one. By adding a pulley to the fixed block of a gun tackle the direction of the pulling force is reversed though the mechanical advantage remains the same, Diagram 3a. This is an example of the Luff tackle. The gun tackle "rove to advantage" has the rope attached to the moving pulley. The Luff tackle adds a fixed pulley "rove to disadvantage. The decision of which to use depends on pragmatic considerations for the total ergonomics of working with a particular situation. Reeving to advantage is the most efficient use of equipment and resources. For example, if the load is to be hauled parallel to the ground, reeving to advantage enables the pulling force to be in the direction of the load movement, allowing obstacles to be managed more easily. Reeving to disadvantage adds an extra sheave to change the direction of the pulling line, which increases friction losses without improving the velocity ratio. Situations in which reeving to disadvantage may be more desirable include lifting from a fixed point overhead; the additional pulley allows pulling downwards instead of upwards so that the weight of the lifter can offset the weight of the load. Friction[edit] The formula used to find the effort required to raise a given weight using a block and fall:

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Chapter 4 : CiteSeerX â€" Citation Query A survey of Kirkman triple systems and related designs

The problem of the existence of large sets of Kirkman triple systems (LKTS) is one of the most celebrated open problems in design theory. Only a few sparsely distributed infinite classes have been.

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Chapter 6 : Large sets of triple systems and related designs (Book,) [blog.quintoapp.com]

Generalized t-designs, which form a common generalization of objects such as t-designs, resolvable designs and orthogonal arrays, were defined by Cameron [P.J. Cameron, A generalisation of t-designs, Discrete Math. (),].

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An LRMTS (v) is a large set consisting of v âˆ’ 2 pairwise disjoint resolvable Mendelsohn triple systems defined over the same v-element blog.quintoapp.com this paper a new product construction for LRMTS is displayed by using generalized LR-designs.

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