

## Review of "The Mathematical Theory of Hitches," by Matt Krauel

Feedback

1. Page 1: in the abstract, "analyzing" could be "analysis".
2. Page 4: the last sentence of the first paragraph should read "... including the properties of which we are currently aware." Also, in the example, "clove hitch" should be capitalized, since Ground Line Hitch, Rolling Hitch, etc. are capitalized.
3. Page 6: is  $T_w$  the same as  $T_3$ ?  $T_w$  is not labeled in the figure.
4. Page 7: the first paragraph in Section V seems like it might be better as an introduction or conclusion for Section IV.
5. Page 10: "then the only  $T_k$  that satisfies ...  $T_k = 0$ " could read, "the inequalities (25) and (26a) are satisfied only when  $T_k = 0$ ."
6. Page 11: in the last paragraph, instead of "there are a  $q$  number of segments," it could read, "there are  $q$  segments." In the same paragraph, is  $a$  the same as  $a$ ?
7. Page 16: before (44), "segment one will make a half turn around itself and segment two." A picture might have helped here. Also, after the last sentence of Section VII, maybe some examples of knots from the knot table could be added that can be analyzed using hitch theory.
8. Page 19: in the conclusion, "principals" should be "principles."
9. Maybe it would be interesting to have more connections made between hitch theory and knot theory throughout the paper.
10. Overall, the paper is very interesting; the topic is presented clearly in an understandable manner.

Review

"The Mathematical Theory of Hitches" is a general discussion of hitch theory, including definitions, examples, and applications. The paper opens with necessary definitions of hitches and the forces associated with them. Then there is an explanation of the analysis of a hitch using systems of equations as well as matrices. The following section provides an analysis of the general case of a hitch, in which the tension on the loose end of the hitch is not necessarily zero. The paper then gives examples of the calculations explained in the previous sections, and describes the connection between hitch theory

and knot theory. It concludes with a brief discussion of some factors that may alter the calculations described in the earlier sections. Overall, this paper provides an organized and coherent explanation of the theory of hitches.

Review of "The Mathematical Theory of Hitches" by Alan Weinstein

Contents

1. Page 1: In the abstract, "analyzing" should be "analyzes".
2. Page 2: The last sentence of the first paragraph should read: "In this paper, we study the properties of hitches on the curves of genus  $g$ . Also, in the examples, "show" should be "shown".
3. Page 6: In the first paragraph of Section IV, "Hitch" should be "hitches".
4. Page 7: The first paragraph of Section V states that it will be better to use an introduction to the section IV.
5. Page 10: The sentence "that satisfies  $\dots$ " should read: "The conditions (1) and (2) are satisfied only when  $L = 0$ ".
6. Page 11: In the last paragraph, instead of "There are a number of examples," it could read: "There are examples". In the same paragraph, it is also stated that "Theorem 10.1" will make a full and complete proof and a complete proof. A better phrase might have been: "Also, after the last sentence of Section VII, maybe some examples of knots from the first table could be added that can be analyzed using Hitch theory."
7. Page 12: In the concluding "remarks", should be "remarks".
8. Page 13: It would be interesting to have more connecting words between "hitch theory" and knot theory throughout the paper.
9. Overall, this paper is very interesting; the topic is somewhat obscure in an undergraduate context.

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The "Mathematical Theory of Hitches" is a natural extension of knot theory, including definitions, examples, and applications. The paper ends with necessary definitions of hitches and the theory associated with them. There is an appendix of the analysis of a particular system of equations as well as examples. The appendix provides an analysis of the general case of a hitch in which the region on the right of the hitch is not necessarily zero. The paper then gives examples of the calculations included in the previous section, and describes the connection between hitch theory