**Template for a Research Paper**

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ABSTRACT

* Sales pitch?
* Why is this interesting?
* What is new and innovative about it?
* Outline the results and conclusions?
* Make a concrete statement about what was achieved.

INTRODUCTION

* What is the problem?
* Why is this interesting?
* What are previous solutions?
* What's the new solution? And when/why is it better than the old ones?
* Give a basic preview of the rest of the paper

THEORY / CONCEPTS (Often combined with Methods, depends on journal)

* What are the key concepts? Use equations where appropriate, and **define all variables.**
* Explain what we expect or predict.
* Describe exactly what will be studied or focused on in the paper from a theoretical or conceptual perspective.

METHODS / IMPLEMENTATION (Various names for this section, and again, sometimes theory will go in here too)

* What are details of the implementation? Use clearly labeled figures with captions where appropriate
* Give reasons for these details / parameter choices
* Make it so anyone familiar with your field can implement the method
* Use a table summarizing parameters used for the experiments for different result sets

RESULTS

* Show comparative results: Use clearly labeled figures with captions!
* Describe what is seen in your results
* Was it as expected?  Why or why not?

DISCUSSION

* What worked?
* Why is this a good thing?
* What didn't work?
* What did you have to do to make it work?
* What will cause problems or are potential weaknesses of your approach, etc.?  
  (maybe talk about potential improvements under different conditions)
* What is some future work that could build on what you’ve done or address remaining questions/weaknesses?

CONCLUSION

* Brief concluding statements: What is(are) the major takeway(s) you want people to remember from the paper. (e.g., “In this work, we’ve demonstrated a design for an inverse phaser proton engine that allowed us to accelerate a rabbit to 1.1 times the speed of light…”

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REFERENCES

* Try to approach the maximum allowed by the journal for the manuscript type you are submitting.