



## AIUB DSpace Publication Details

<b>Title:</b>	Design and Analysis of EV Controller using IPMSM Taking Core Loss into Account
<b>Author(s) Name:</b>	Mohammad Ashraful Alam, Mohammad Abdul Mannan
<b>Contact Email(s):</b>	mdmannan@aiub.edu
<b>Published Journal Name:</b>	Journal of Control & Instrumentation
<b>Type of Publication:</b>	Journal
<b>Volume:</b>	6 Issue 2
<b>Publisher:</b>	STM Journals
<b>Publication Date:</b>	2015
<b>ISSN:</b>	2347-7237; eISSN: 2229-6972
<b>URL:</b>	<a href="https://stmjournals.com/index.php?journal=JoCI&amp;page=article&amp;op=view&amp;path%5B%5D=6050">https://stmjournals.com/index.php?journal=JoCI&amp;page=article&amp;op=view&amp;path%5B%5D=6050</a>
<b>Other Related Info.:</b>	Page 1-8

**Citation:** Mohammad Ashraful Alam, Mohammad Abdul Mannan, “Design and Analysis of EV Controller using IPMSM Taking Core Loss into Account”, Journal of Control & Instrumentation (STM Journals), Vol. 6, Issue 2, pp. 1-8, 2015.



# AIUB DSpace Publication Details

## Abstract:

Now a days vehicles with electrical differentials are becoming more and more popular. The mechanical differentials are replaced by using two motors. In the electrical vehicle (EV) different types of electrical machines such as induction motor, permanent magnet synchronous motor etc. are used. The controller design for the different motors is a fascinating and challenging work to obtain desired performance properly. The interior-permanent magnet synchronous motor (IPMSM) has already been used to design electrical differential for an EV. The controllers which have been designed for this purpose depend on the mathematical model of IPMSM. Unfortunately, to design the controller for IPMSM the core loss has not been considered, but to obtain the precise torque control the core loss of an IPMSM should be considered. In this paper, the PI controllers of an electrical differential for an EV system based on the IPMSMs taking core loss is designed. The performances of designed controllers are evaluated by Matlab/Simulink software. In the simulation work three road conditions for EV are considered. One is when the road is curved to right. Other is when the road is curved to left and another one is for the slope type road. Their performances are shown separately as well as all together.

**Keywords:** Electrical vehicle, IPMSM, electrical differential