

Standing Paraplegic Omni-directional Transport

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Standing Paraplegic Omni-directional Transport ...



<http://www.youtube.com/watch?v=gK52RkbGw9s>

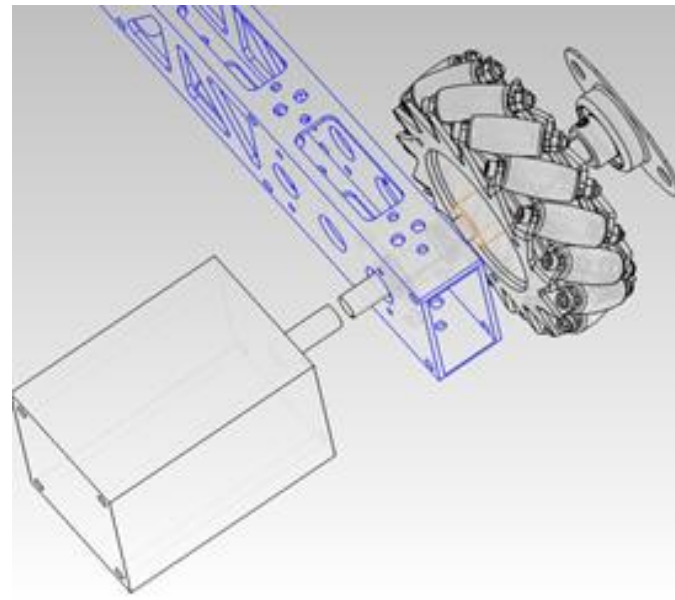
Standing Paraplegic Omni-directional Transport (SPOT)



Current Status of the Project

Base Design & Fabrication

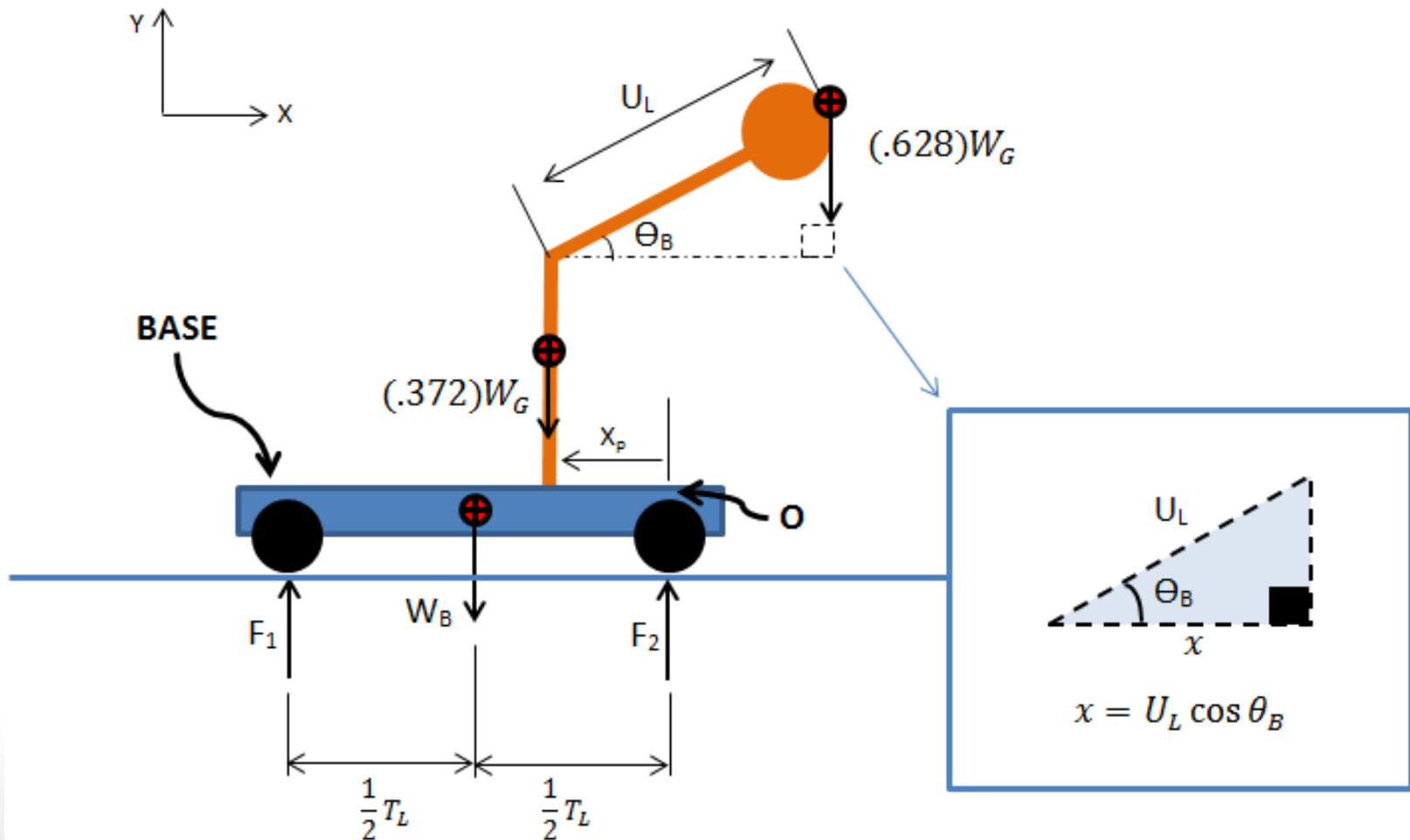
- Materials
 - Aluminum & Steel
- Components
 - Mecanum Wheels
 - Toughboxes
- Contains
 - Motors
 - Motion Controller
 - Batteries
 - Brakes



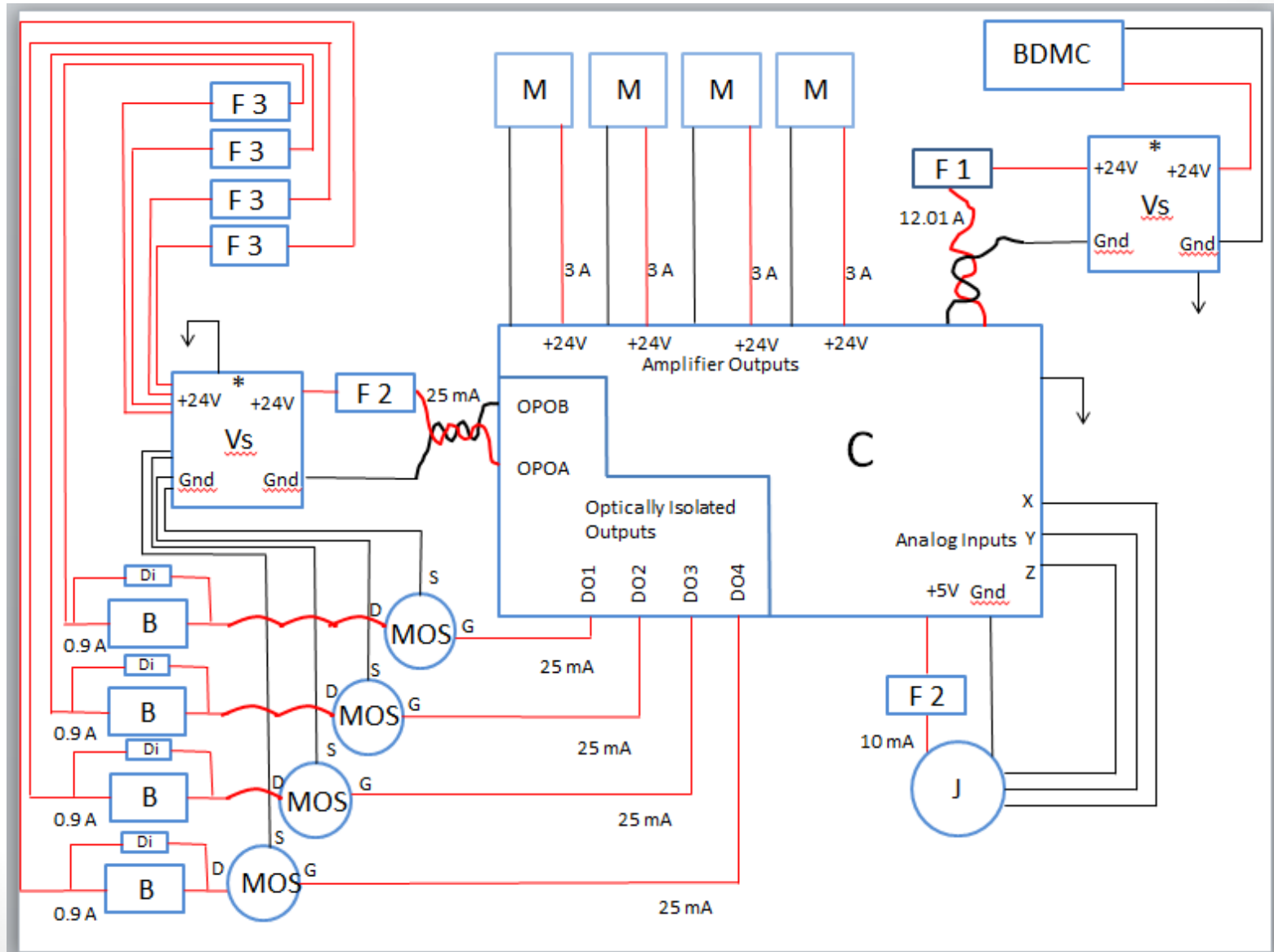
Base Safety Analysis

Free Body Diagram

DR. CUPPELS

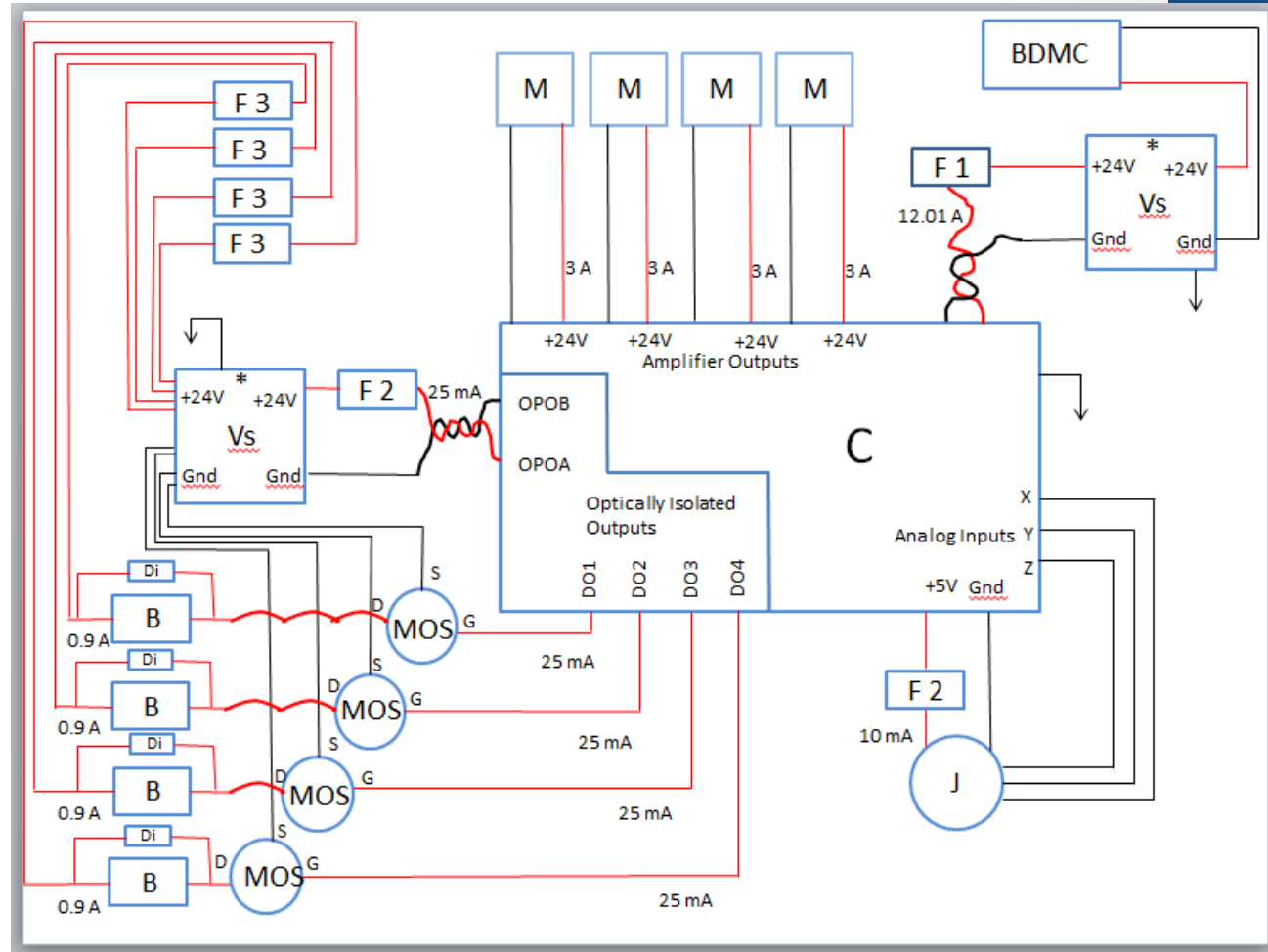


Circuit Design



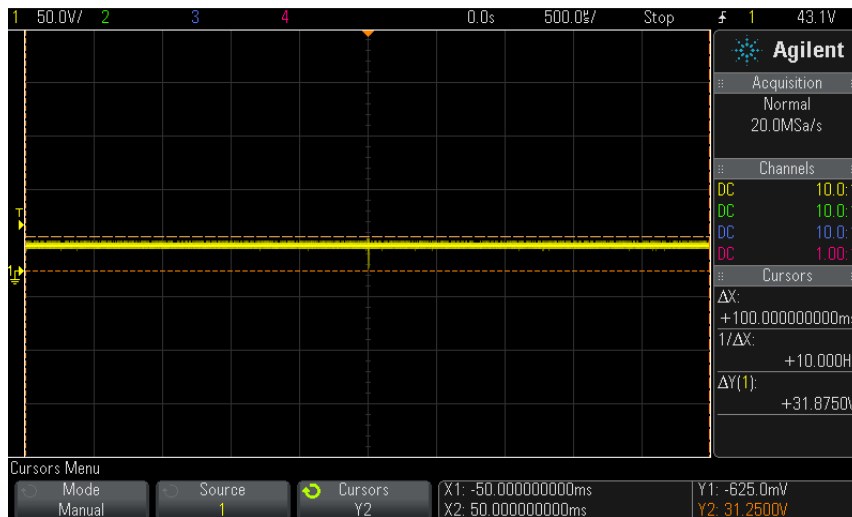
Primary Circuit Components

- Controller
- Stepper Motors
- ERS Brakes
- Joystick
- Connectivity

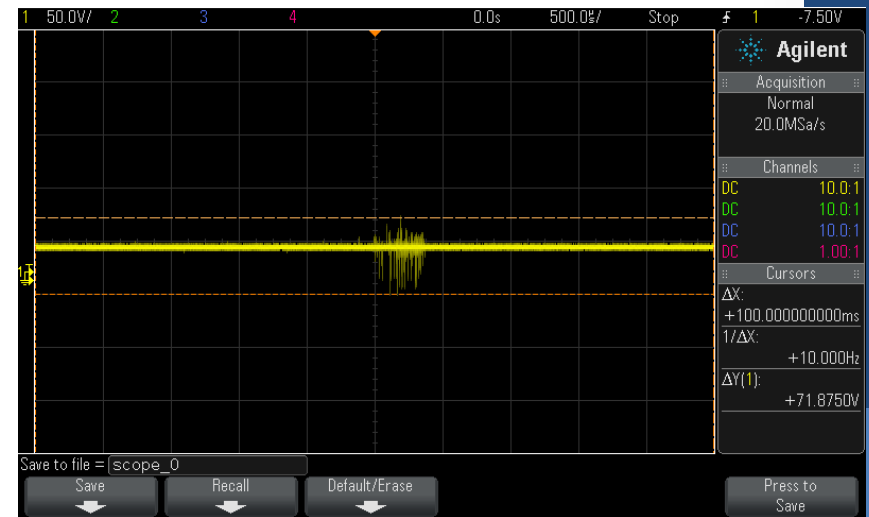


Circuit Protection

- Fuses
- BDMC
- Circuit boxes
- Diodes – Brake Circuit



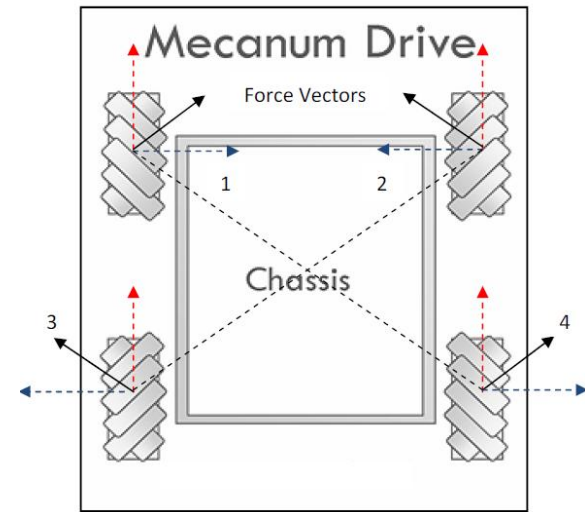
Dissipation Diode



No Protection

Programming

- Programming needs to:
 - Read joystick position
 - Adjust speed of each motor accordingly
 - Engage the brakes when not in motion
 - Shut down everything at the push of a button
- Pre-alpha version of program has been written
- Still need to:
 - Test program with Galil controller, motor, and brake
 - Test program with finished base and circuitry



Future Work

- Continue:
 - Fund Raising
 - Material Acquisition
- Construction
 - Finish the base
 - Build the circuit
 - Finalize programming
 - Stability mechanism
- Testing
 - Safety
 - Cadaver and residency testing



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Thank You Corporate Sponsors!



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