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Final Class – Study Outline

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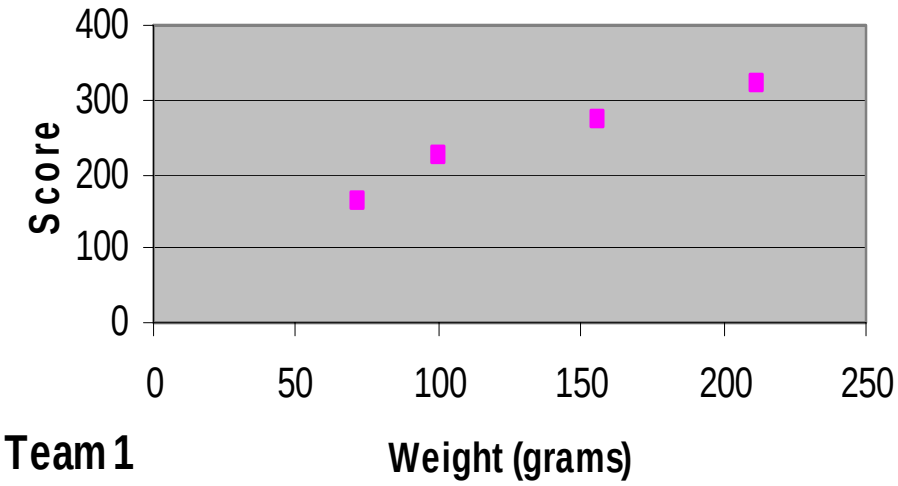
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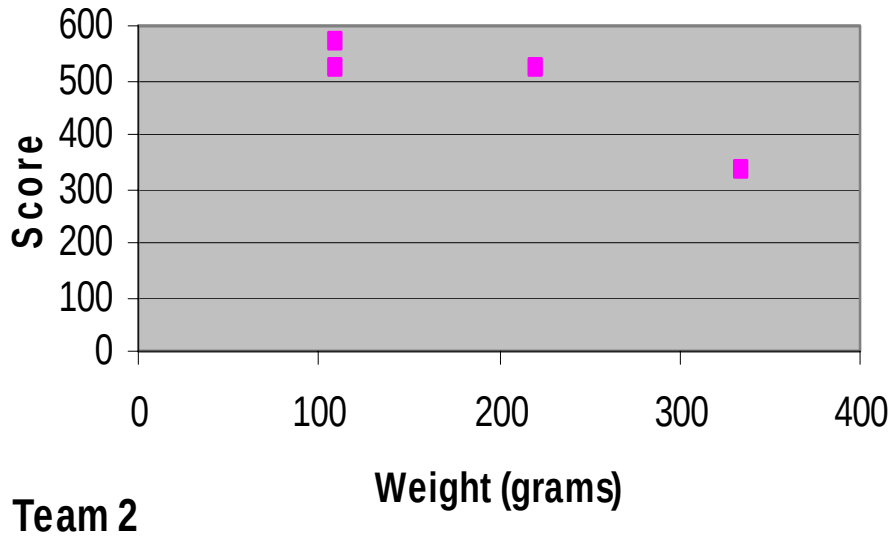
Outline

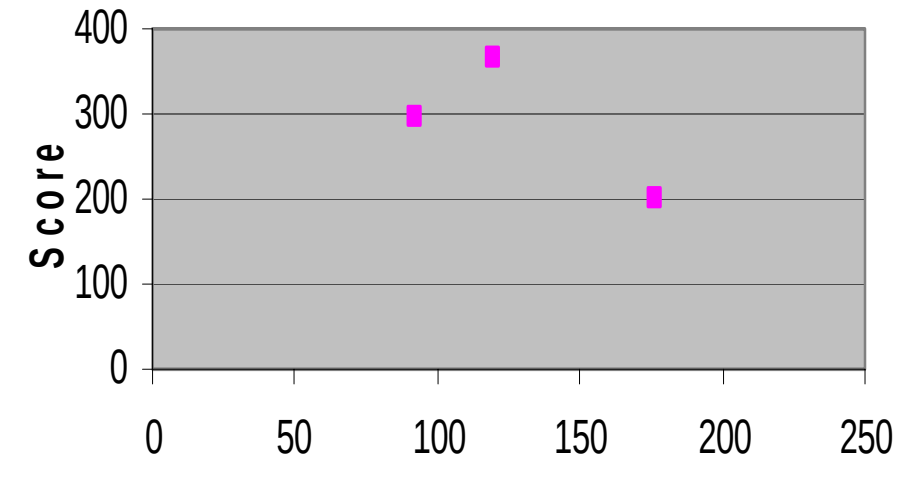
- Analysis of Design Competition
- Discussion of Multi-Band-Gap Optimization
- Discussion of Motor/Cell Matching HW
- Overview of Expectations for Final

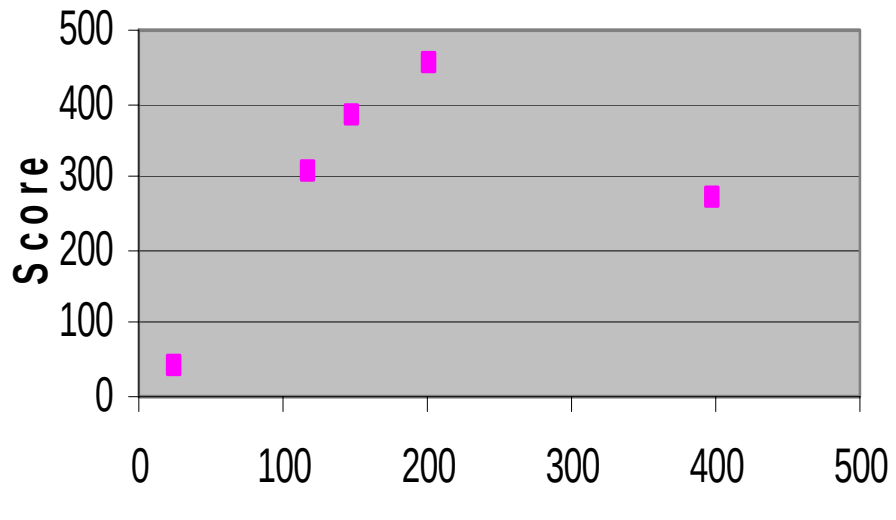
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Basic Results



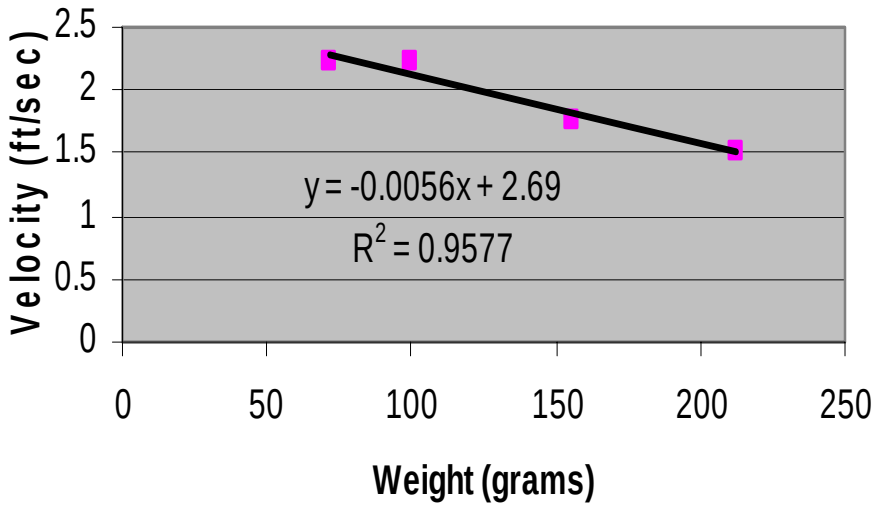


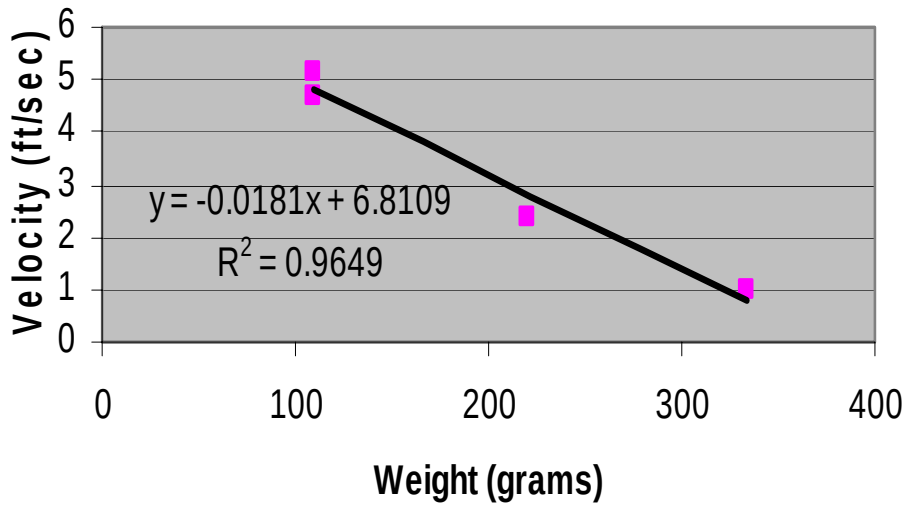


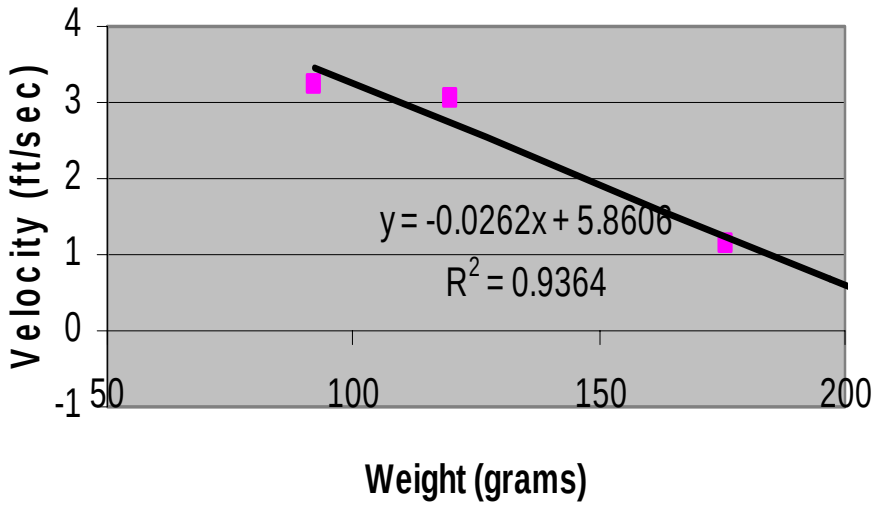


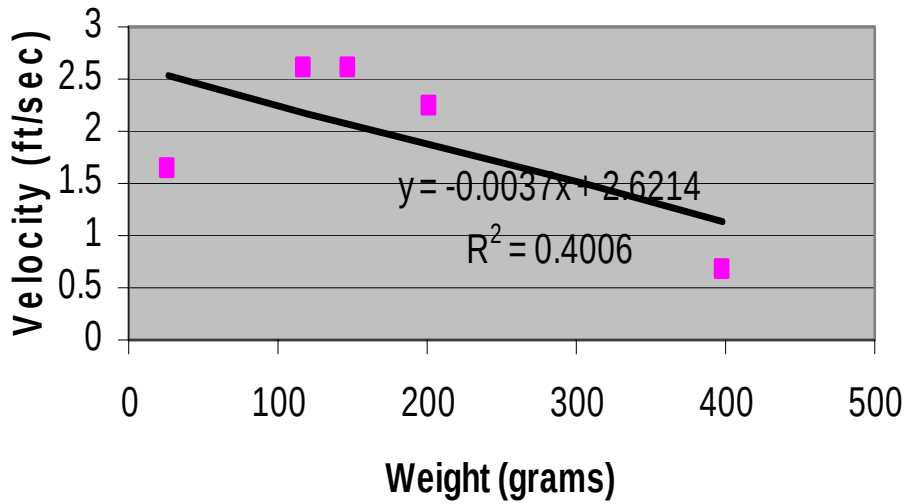
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Velocity Results









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Feet/sec = slope(grams)+intercept

Team	slope of velocity with weight	intercept
1	-0.0056	2.69
2	-0.0181	6.81
3	-0.0262	5.86
4	-0.0073	3.604

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Optimization Analysis

$$Score = \frac{Dist * Mass}{Time}$$

$$Score = Velocity * Mass$$

$$Velocity = A * M + B$$

$$Score = A * M^2 + B * M$$

Zeros at: M=0 and M=-B/A

$$PeakScore = \frac{-B}{2A}$$

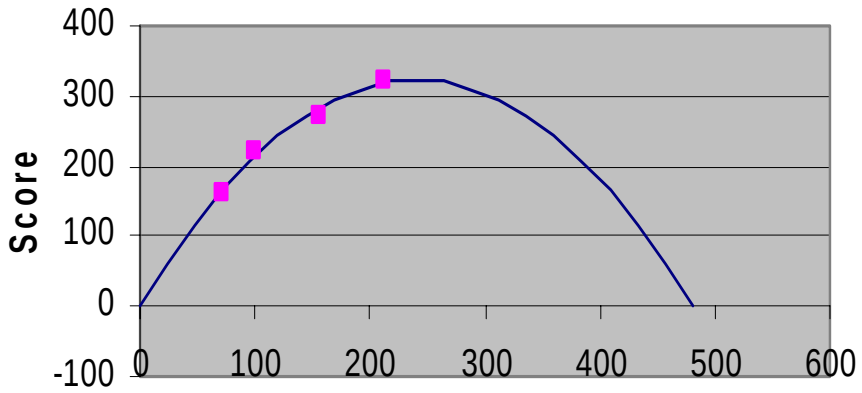
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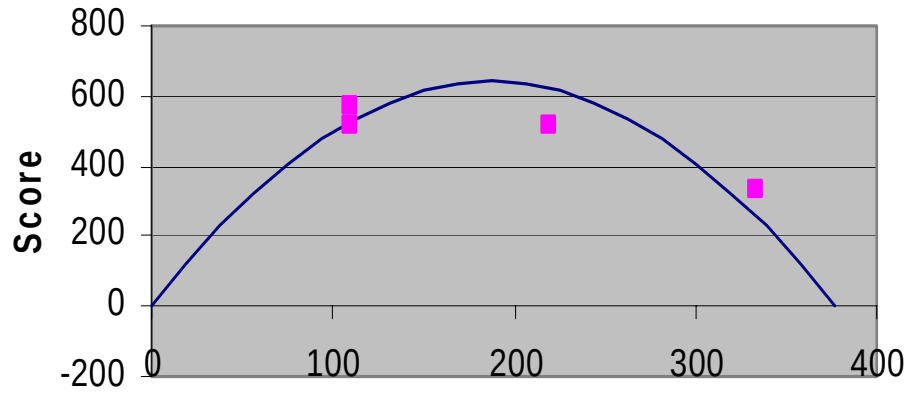
Peak Estimates

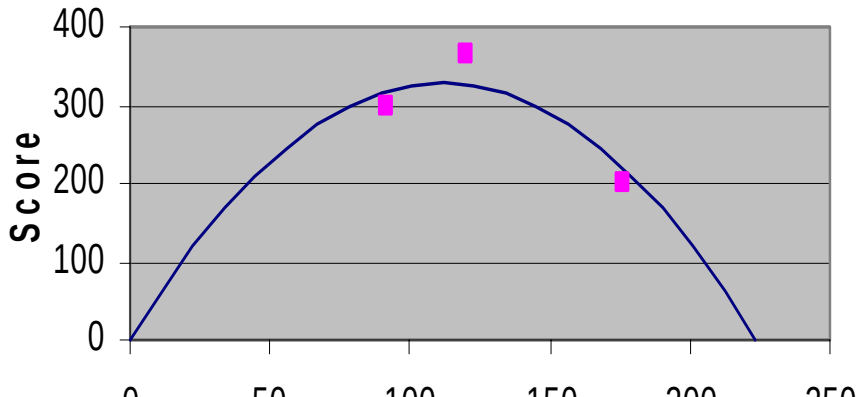
Team	Best weight to Use (grams)	Best score (estimate)
1	240	323
2	188	641
3	112	328
4	247	445

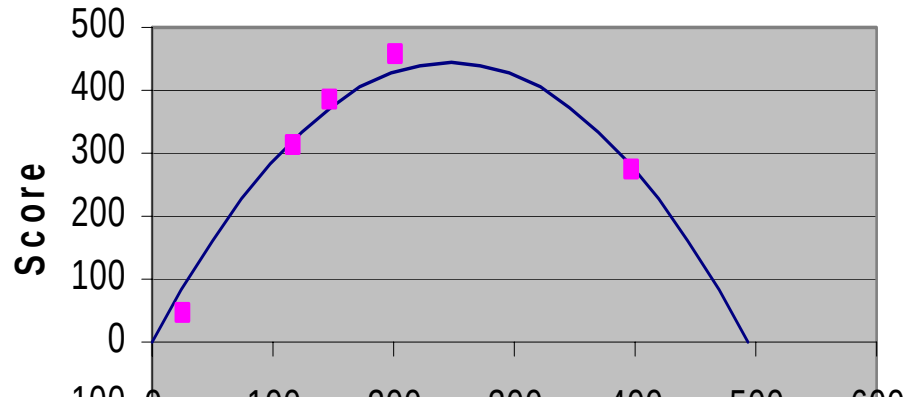
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Final Fits - Overlaid









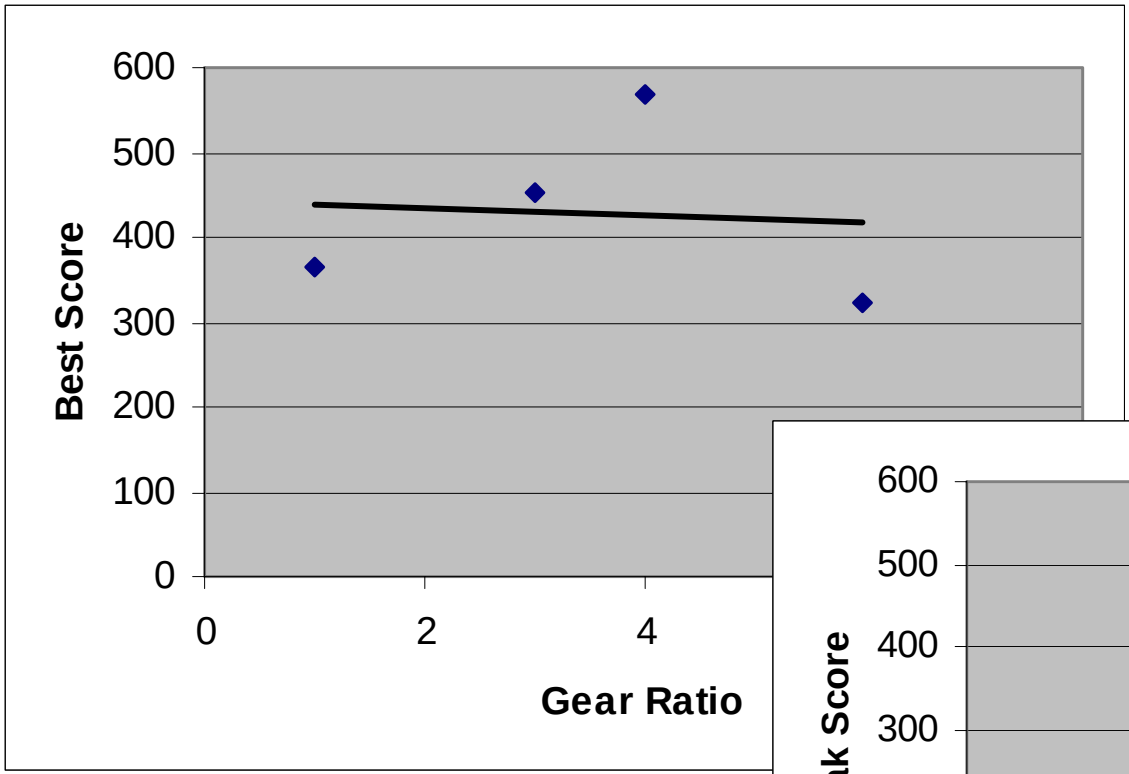
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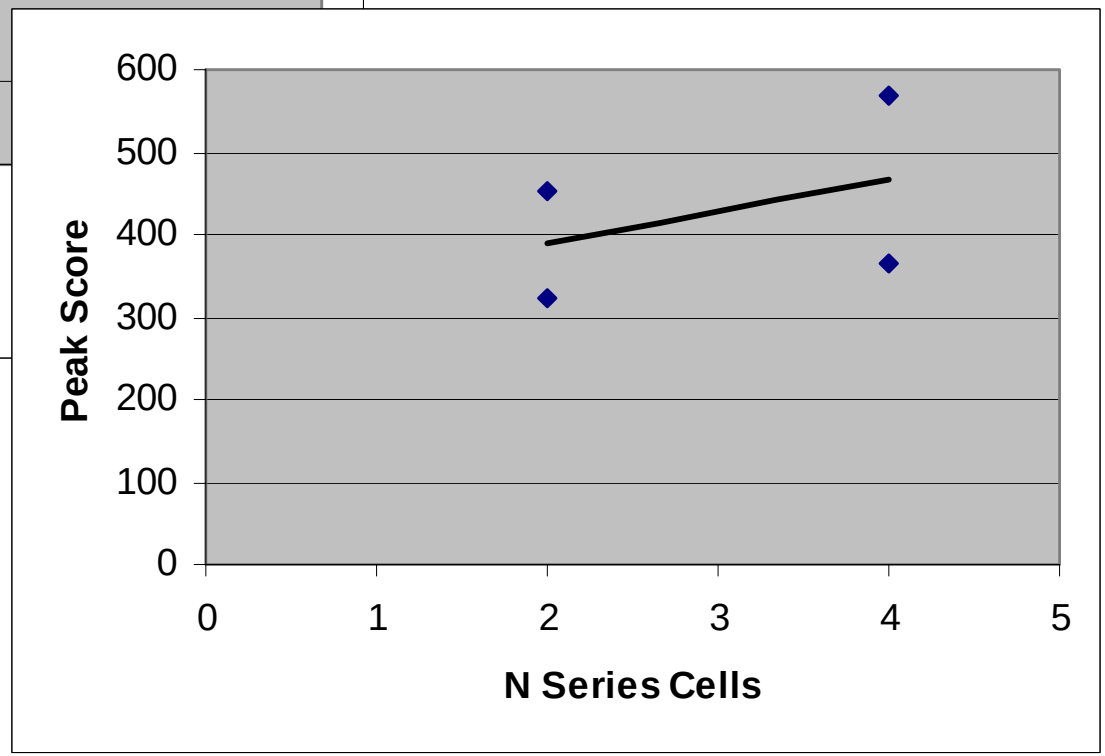
Design Factors

Team	Wiring	Gearing
1	2+2	1:6
2	Series	1:4
3	Series	1:1
4	2+2	1:3

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Correlations





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Project Conclusions

- Full Series Wiring Better
- Higher RPM for Motor Better
- Reduce Friction
- Tilting Toward Sun Important
- Reflectors Acted as Sails

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Study Topics

- Multi-Junction Optimization
- DC Motors Characteristics
- Project Work and Analysis of Results
- Organic Photovoltaics
- Dye Sensitized Solar Cells
- Nano-Rod Solar Cells
- Motor Matching with Solar Cell
- Transparent Conductor Behavior
- Matching Absorption Depth to pn-Junction Depletion
- Patent Discussions and Ideas