

M.Sc. Projects

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2013/2014 office hours: **Friday 13:00-15:00**

Absolutely Minimizing Lipschitz Extensions and Infinity Laplacian

M.Sc. Projects

1. Absolutely Minimizing Lipschitz Extensions
2. Metric Dimension
3. Arcs with Increasing Chords

Absolutely Minimizing Lipschitz Extensions and Infinity Laplacian

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1. Absolutely Minimizing Lipschitz Extensions
2. Metric Dimension
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Key words

Absolutely Minimizing Lipschitz Extensions and Infinity Laplacian

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1. Absolutely Minimizing Lipschitz Extensions

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Key words

- Lipschitz mappings

Absolutely Minimizing Lipschitz Extensions and Infinity Laplacian

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1. Absolutely Minimizing Lipschitz Extensions

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Key words

- Lipschitz mappings

$$\|f(x) - f(y)\| \leq L\|x - y\| \text{ for all } x, y$$

Absolutely Minimizing Lipschitz Extensions and Infinity Laplacian

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Key words

- Lipschitz mappings

$$\|f(x) - f(y)\| \leq L\|x - y\| \text{ for all } x, y$$

- minimizing Lipschitz extensions

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Key words

- Lipschitz mappings

$$\|f(x) - f(y)\| \leq L\|x - y\| \text{ for all } x, y$$

- minimizing Lipschitz extensions
- absolutely minimizing functions

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Key words

- Lipschitz mappings

$$\|f(x) - f(y)\| \leq L\|x - y\| \text{ for all } x, y$$

- minimizing Lipschitz extensions
- absolutely minimizing functions
- infinity harmonic functions

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Key words

- Lipschitz mappings

$$\|f(x) - f(y)\| \leq L\|x - y\| \text{ for all } x, y$$

- minimizing Lipschitz extensions
- absolutely minimizing functions
- infinity harmonic functions
- comparison with cones

Main open questions

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1. Absolutely
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Main open questions

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Questions

- Problem of regularity of these functions

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Questions

- Problem of regularity of these functions
- Are all these functions differentiable?

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Questions

- Problem of regularity of these functions
- Are all these functions differentiable?

Recommended courses

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Questions

- Problem of regularity of these functions
- Are all these functions differentiable?

Recommended courses

- Functional Analysis

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Questions

- Problem of regularity of these functions
- Are all these functions differentiable?

Recommended courses

- Functional Analysis
- Partial Differential Equations

Metric Dimension

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Metric Dimension

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Key words

Metric Dimension

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Key words

- Hausdorff measures and Hausdorff dimension

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Key words

- Hausdorff measures and Hausdorff dimension
- packing measures and packing dimension

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Key words

- Hausdorff measures and Hausdorff dimension
- packing measures and packing dimension
- upper and lower box-counting dimension

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Key words

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- packing measures and packing dimension
- upper and lower box-counting dimension
- upper and lower Minkowski dimension

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Key words

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- packing measures and packing dimension
- upper and lower box-counting dimension
- upper and lower Minkowski dimension
- Lipschitz mappings

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Key words

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- packing measures and packing dimension
- upper and lower box-counting dimension
- upper and lower Minkowski dimension
- Lipschitz mappings
- rectifiable sets

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Key words

- Hausdorff measures and Hausdorff dimension
- packing measures and packing dimension
- upper and lower box-counting dimension
- upper and lower Minkowski dimension
- Lipschitz mappings
- rectifiable sets
- sets of fractional dimension and fractals

Main questions to be studied

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1. Absolutely
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Question

- To examine in detail these dimensions and their inter-relationship.

Main questions to be studied

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Question

- To examine in detail these dimensions and their inter-relationship.

Recommended courses

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Question

- To examine in detail these dimensions and their inter-relationship.

Recommended courses

- Measure and Integration

Main questions to be studied

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Question

- To examine in detail these dimensions and their inter-relationship.

Recommended courses

- Measure and Integration
- Functional Analysis

Arcs with Increasing Chords

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Key words

- curve length

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Key words

- curve length
- rectifiable curve

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Key words

- curve length
- rectifiable curve
- chord of a curve

Arcs with Increasing Chords

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Key words

- curve length
- rectifiable curve
- chord of a curve
- calculus of variations

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Question

- A curve C in the plane has the **increasing chord property** if $\|x_2 - x_3\| \leq \|x_1 - x_4\|$ whenever x_1, x_2, x_3 and x_4 lie in that order on C .

It is known that for a plane curve with the increasing chord property and endpoints a and b its length L satisfies

$$L \leq 2\sqrt{3}\|a - b\|.$$

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- Can you improve the above constant " $2\sqrt{3}$ "?

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- Partial Differential Equations