3D Reconstruction From Shadows

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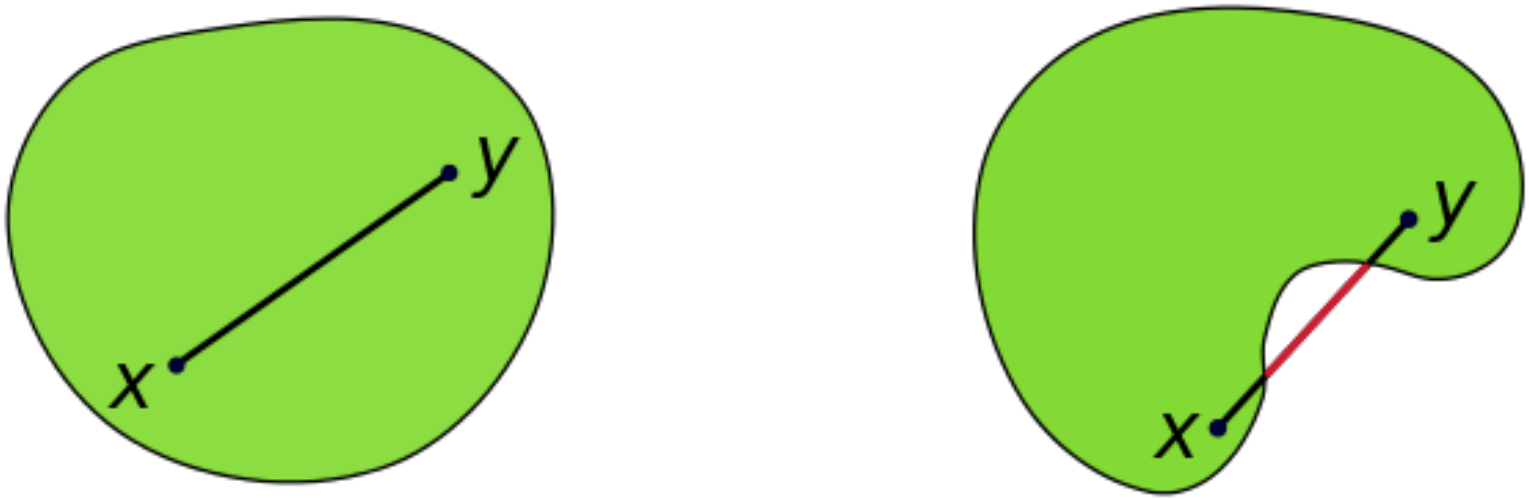
Group meeting

Outline

Motivation

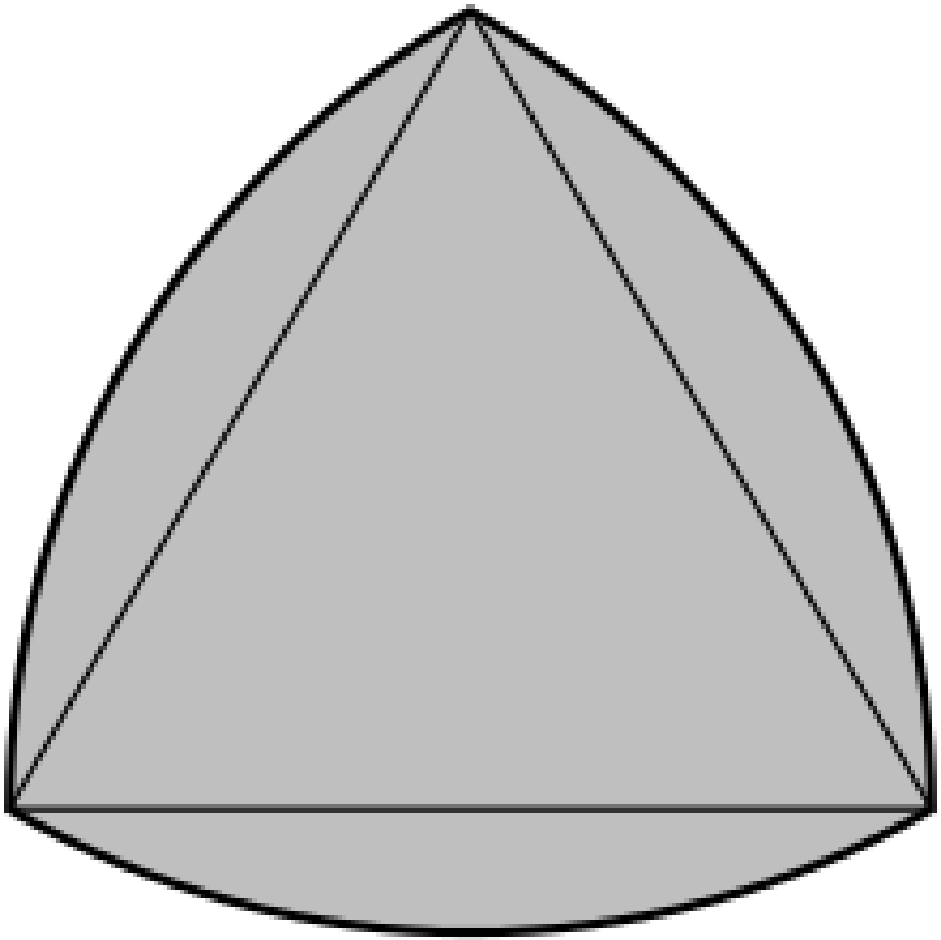
Outline

What kind of sets can we reconstruct?



Outline

Cautionary tale



Example

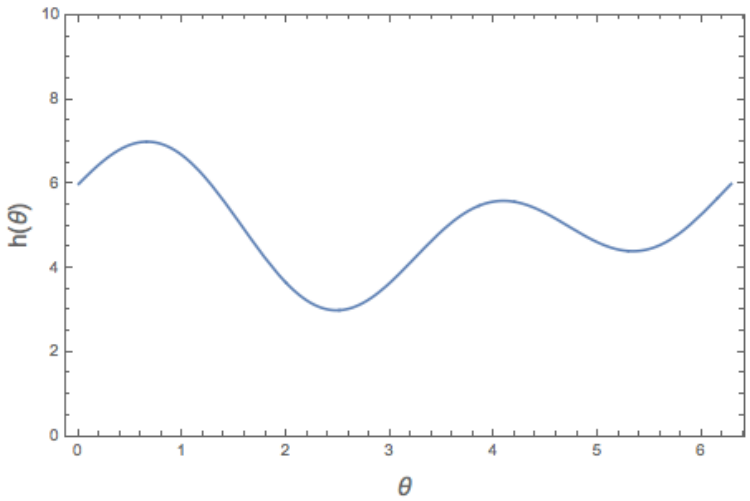


Figure: Shadow function

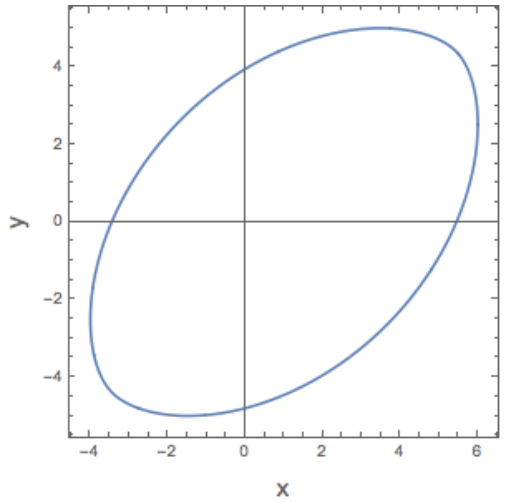
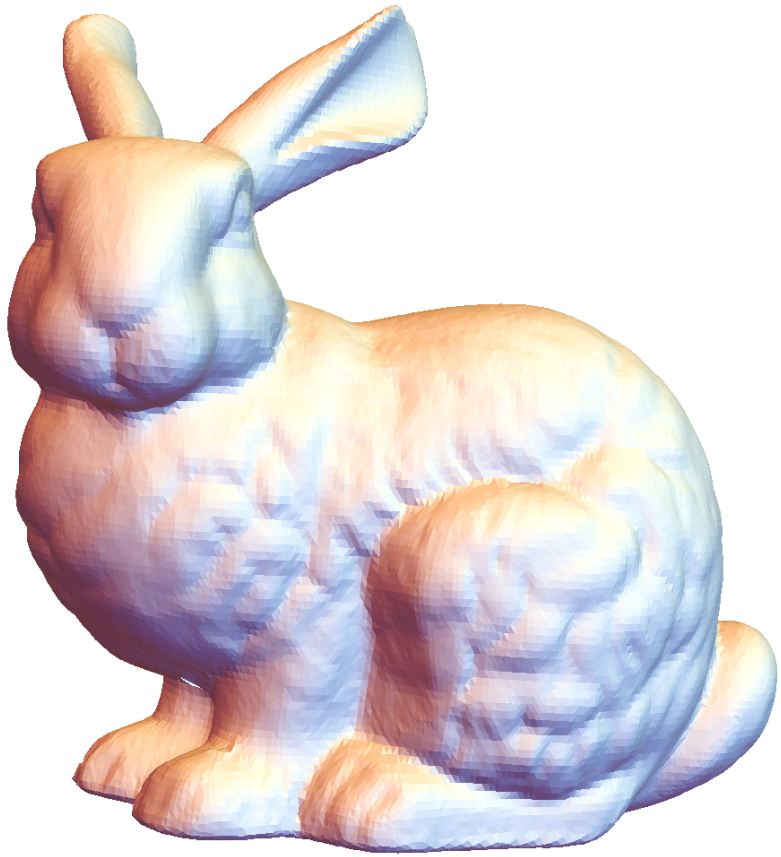


Figure: Reconstructed domain

Outline

3D Reconstruction



3D Reconstruction

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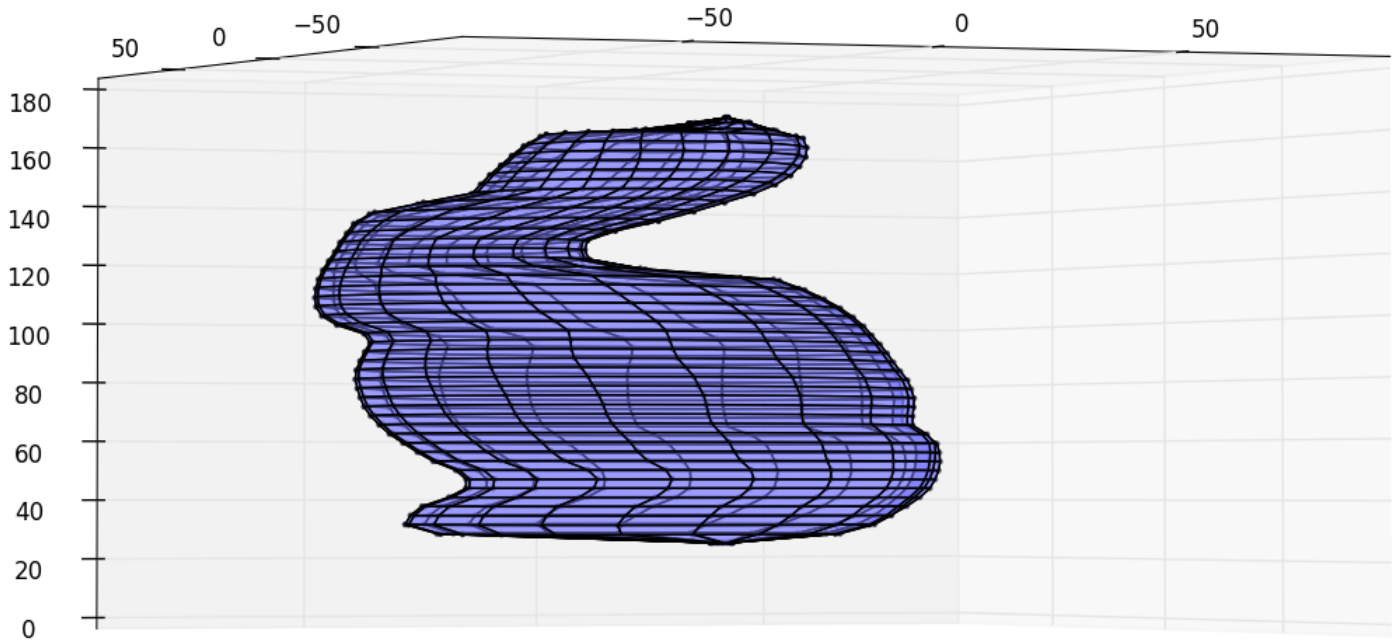
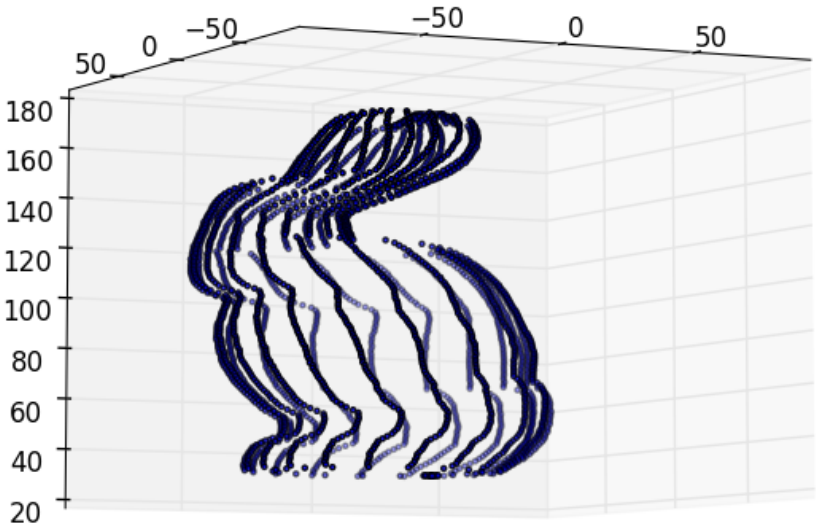


But the ears!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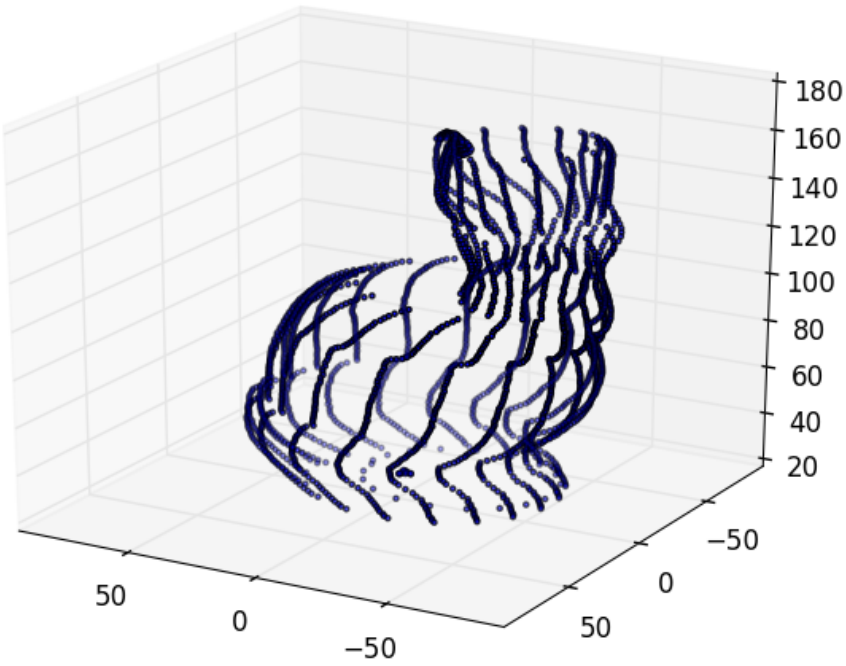
0
−50
−50
0
50
180
160
140
120
100
80
60
40
20


180
160
140
120
100
80
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0
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−50

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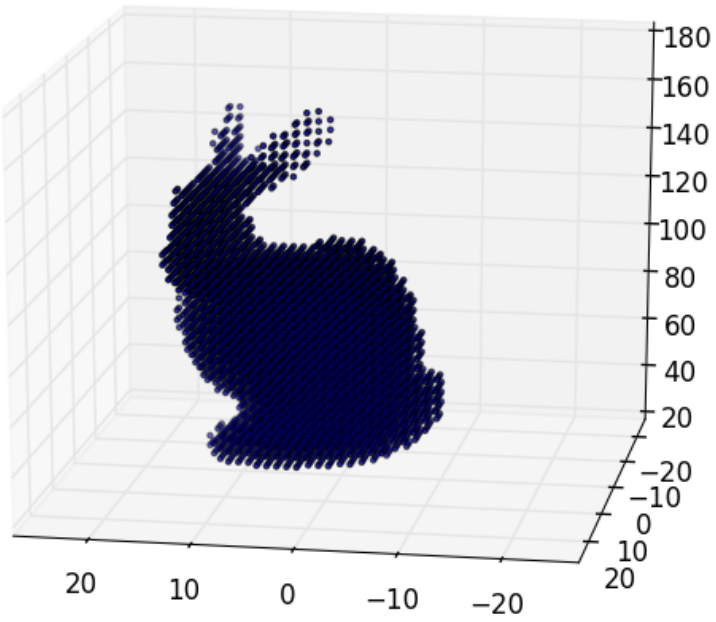

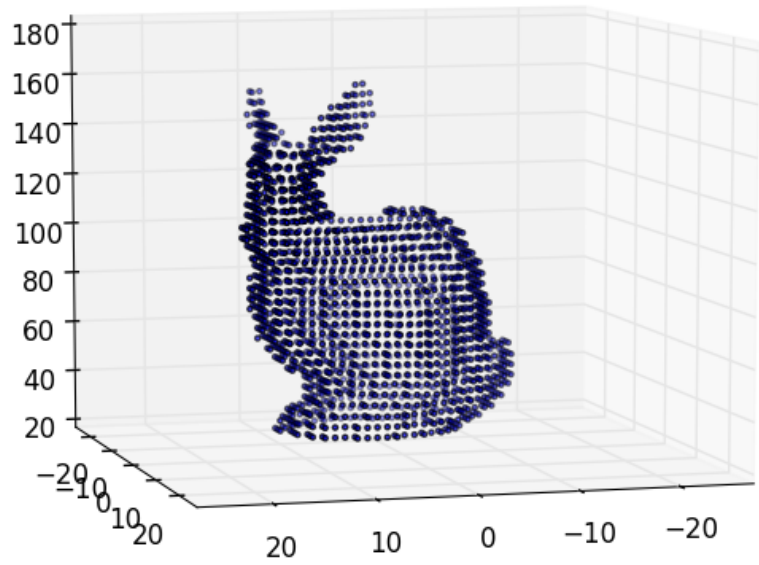

TV Denoising

$$\min_u \int_\Omega |Du| + \frac{1}{2}\lambda \|u - f\|_2^2$$