1 About this project

The submitted .zip folder contains matlab code, pictures and this .pdf file. Each section below goes over the different parts of the project and references the relevant files. Note the hyperlinks in some sections that lead to videos of simulations uploaded to the university MyMedia website.

2 Random deposition model

- File randomDepositionModel.m
  - Matlab code for running a simulation of the random deposition model
- Hyperlink running simulation at rate 3 for 2 minutes

3 Ballistic deposition model

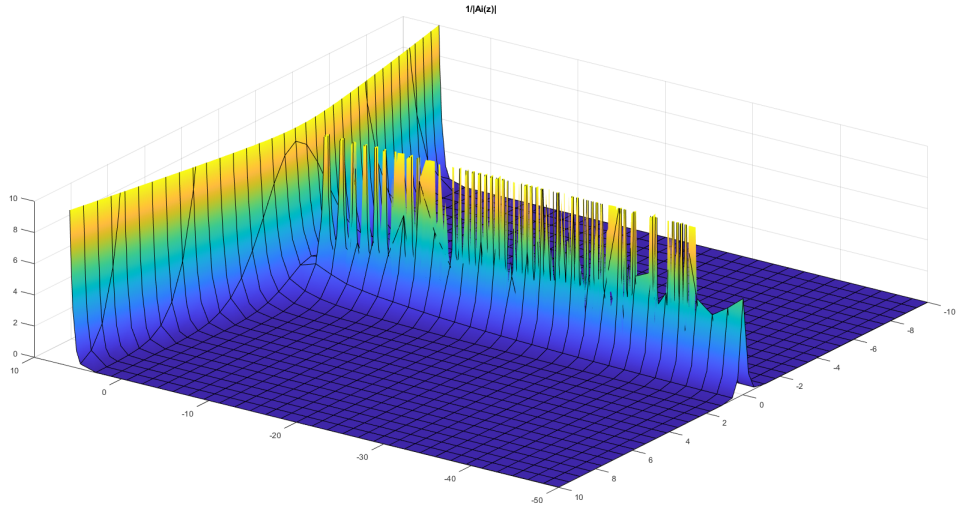
- File ballisticDepositionModel.m
  - Matlab code for running a simulation of the ballistic deposition model
- Hyperlink running simulation at rate 3 for 2 minutes

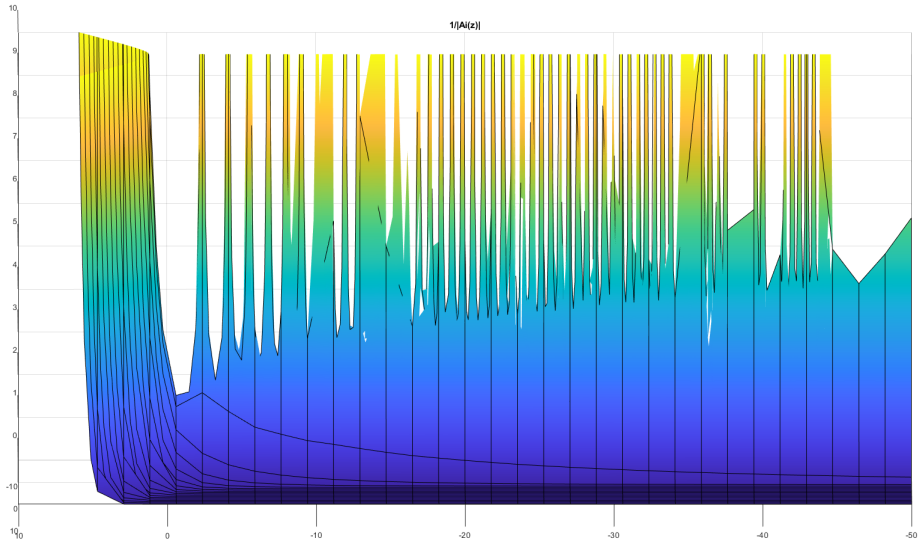
4 Corner growth model

- File cornerGrowthModel.m
  - Matlab code for running a simulation of the corner growth model
- Hyperlink running simulation at rate 3 for 2 minutes

5 Airy plot

- File airySim.m
  - Mathlab code for running plot of $1/\left|\mathrm{Ai}\left(z\right)\right|$
  - Used for comparison with the next section
- Screen captures of output (files inverseAiry1.png, inverseAiry2.png):





6 Secular function plot

- File CHARPOLYSIM.M
  - Matlab code for plotting 1 over the modulus of approximating polynomials

$$\prod_{1}^{n}\left(1-\frac{z}{\lambda_{n,k}}\right)e^{z/\lambda_{n,k}}$$

of the secular function

$$\prod_{k=1}^{\infty}\left(1-\frac{z}{\lambda_{k}}\right)e^{z/\lambda_{k}}$$

where $\lambda_{n,1}\leq\cdots\leq\lambda_{n,n}$ are rescaled $\beta\geq 1$ ensembles converging to the eigenvalues $\lambda_1\leq\cdots$ of the stochastic Airy β operator

- Screen captures of running code with $\beta = 5$ and $n = 100$ (program has trouble with larger n) (files CHARPOLYBETA5N100_1.PNG, CHARPOLYBETA5N100_2.PNG):