Topics on Fundamental Science

M.Sc

Higher Mathematics I

LectureSlide

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Chapter 1

System of ODEs

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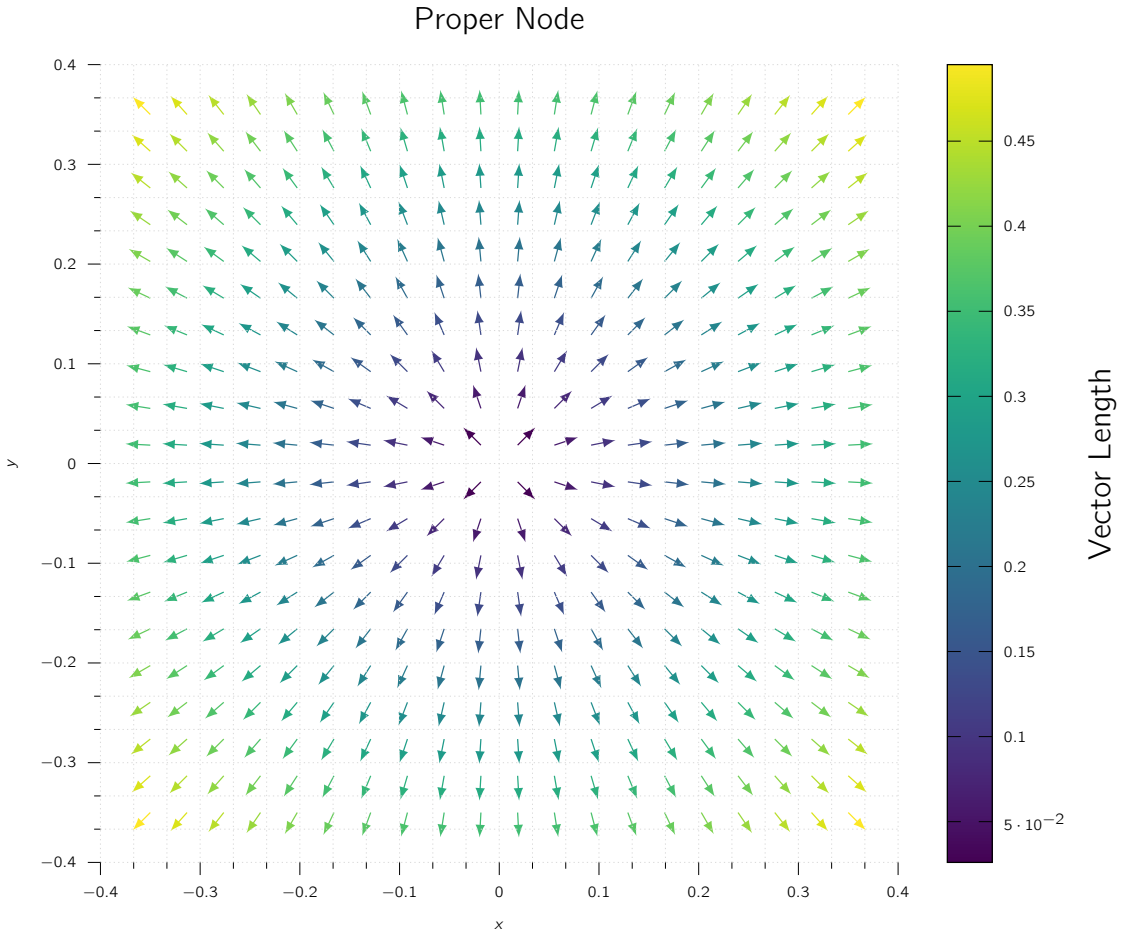
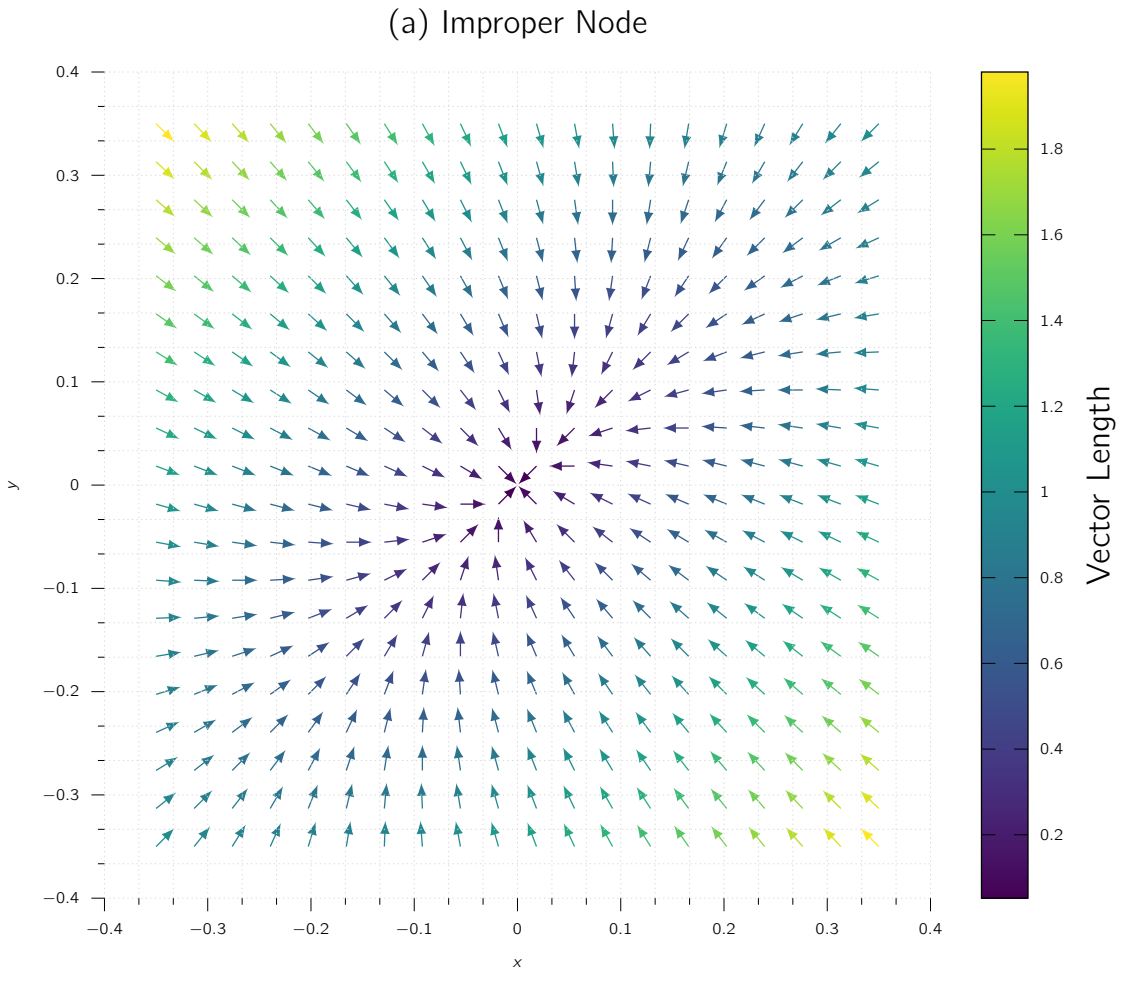


Figure: A visual description of saddle point.



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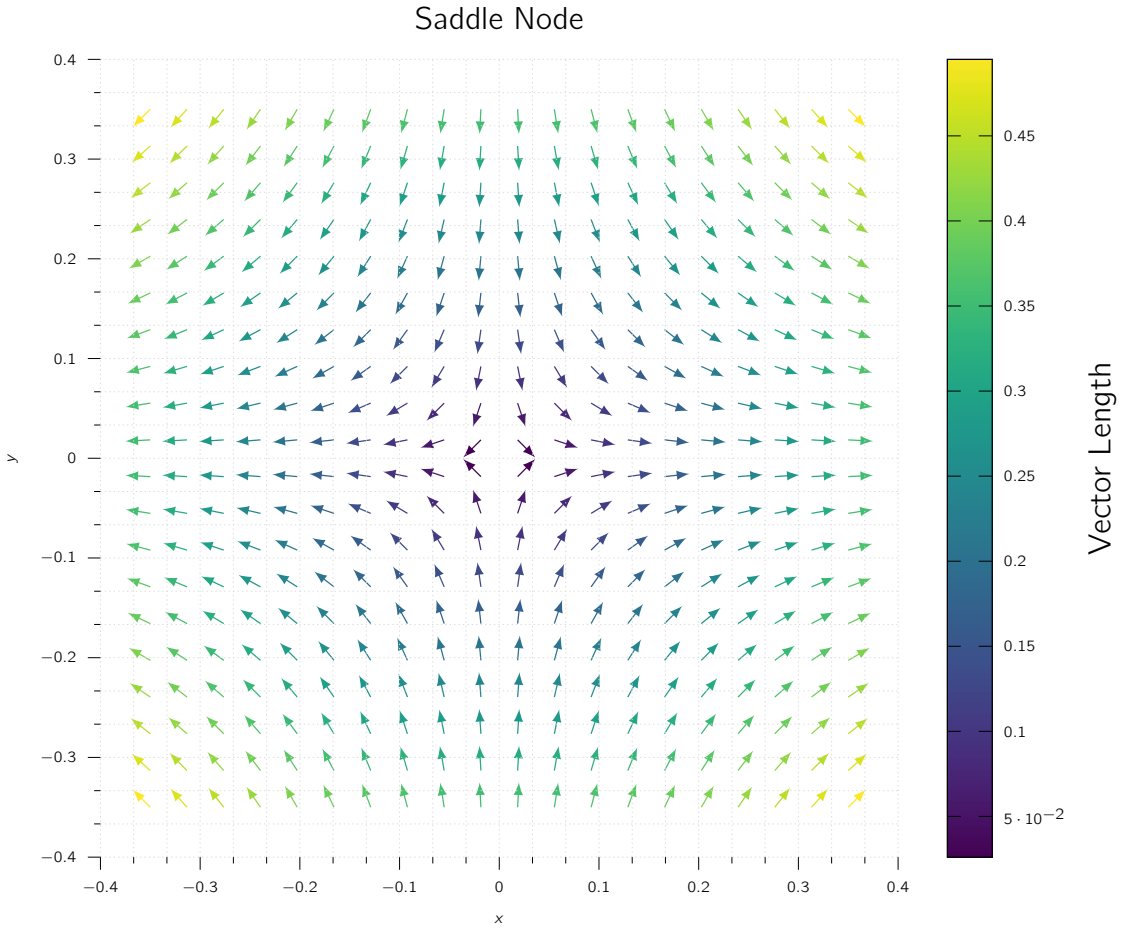

Figure: A visual description of saddle point.

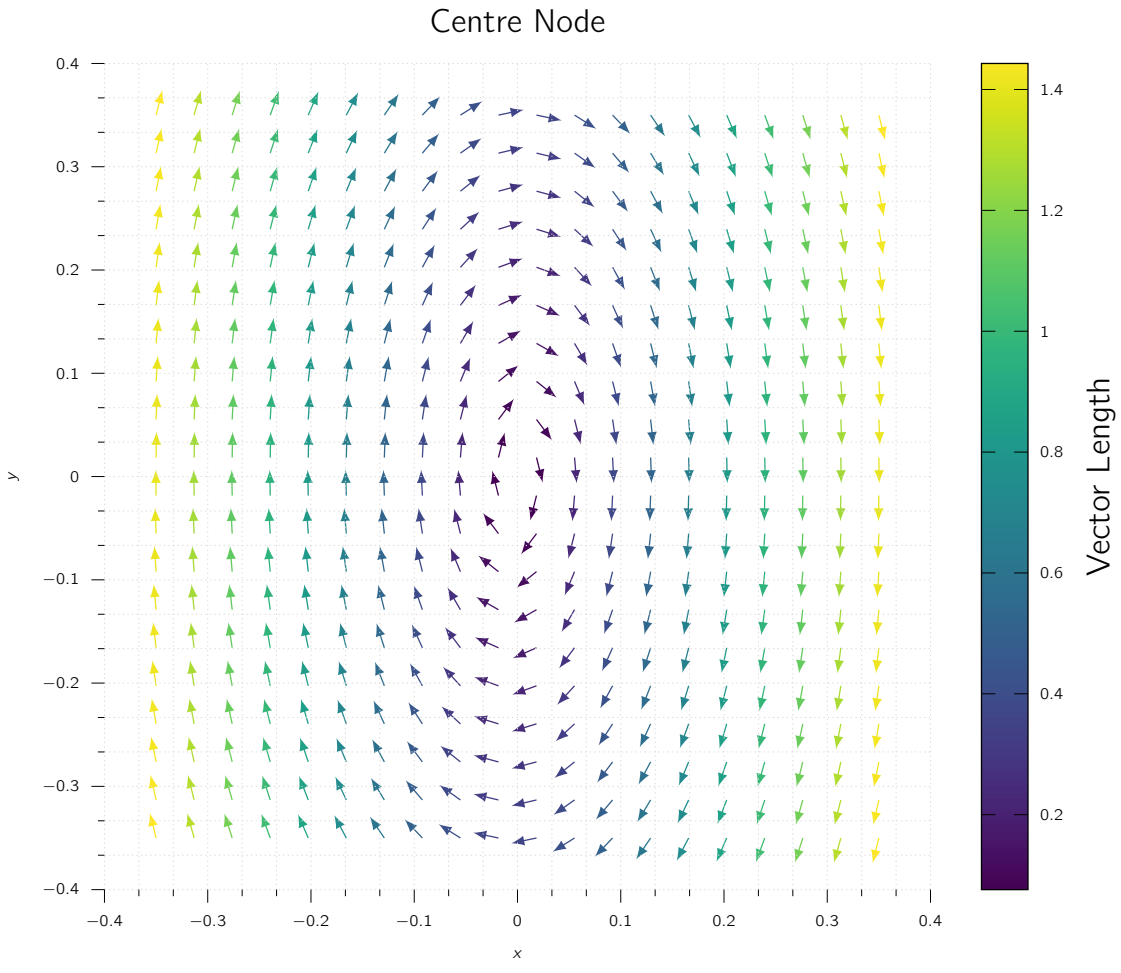

Figure: A visual description of saddle point.

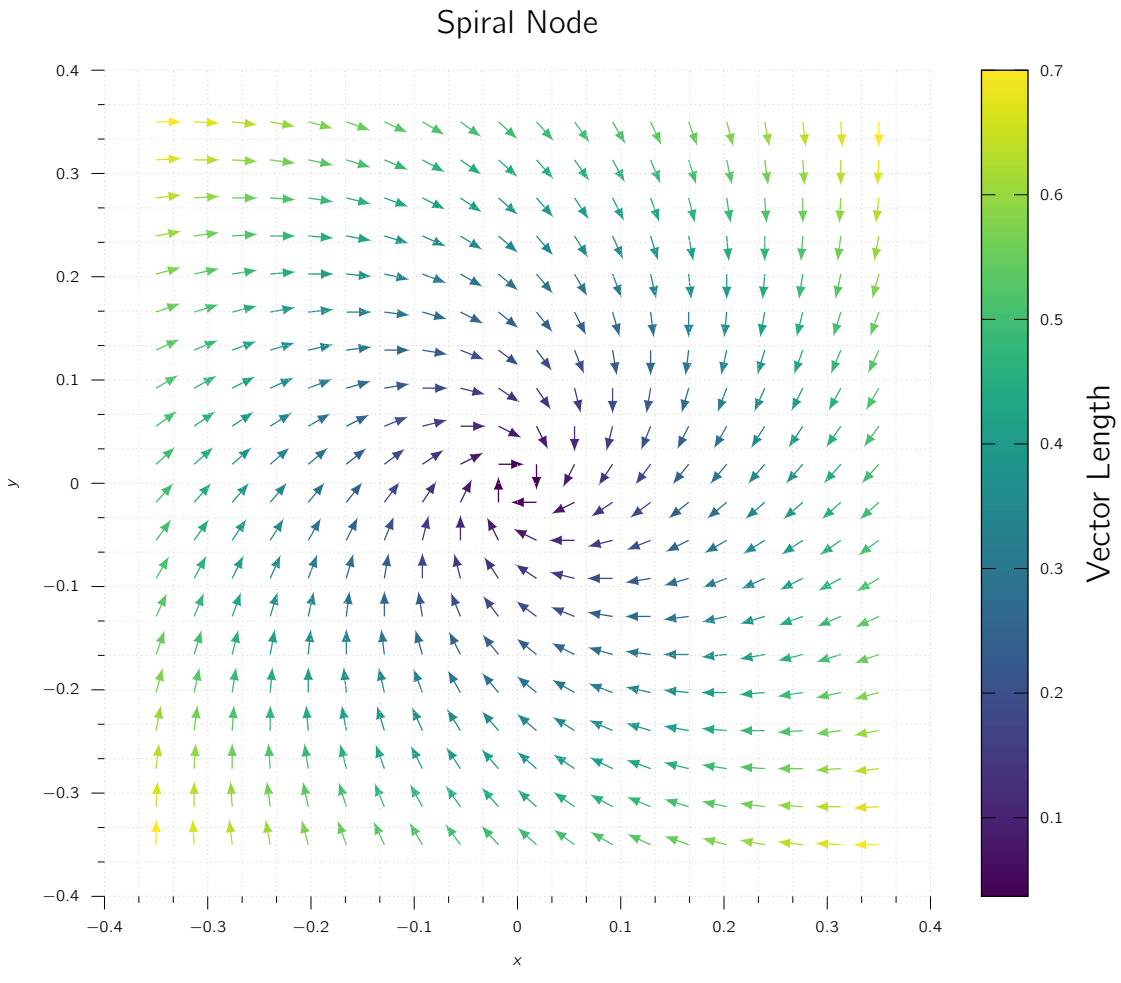

Figure: A visual description of saddle point.

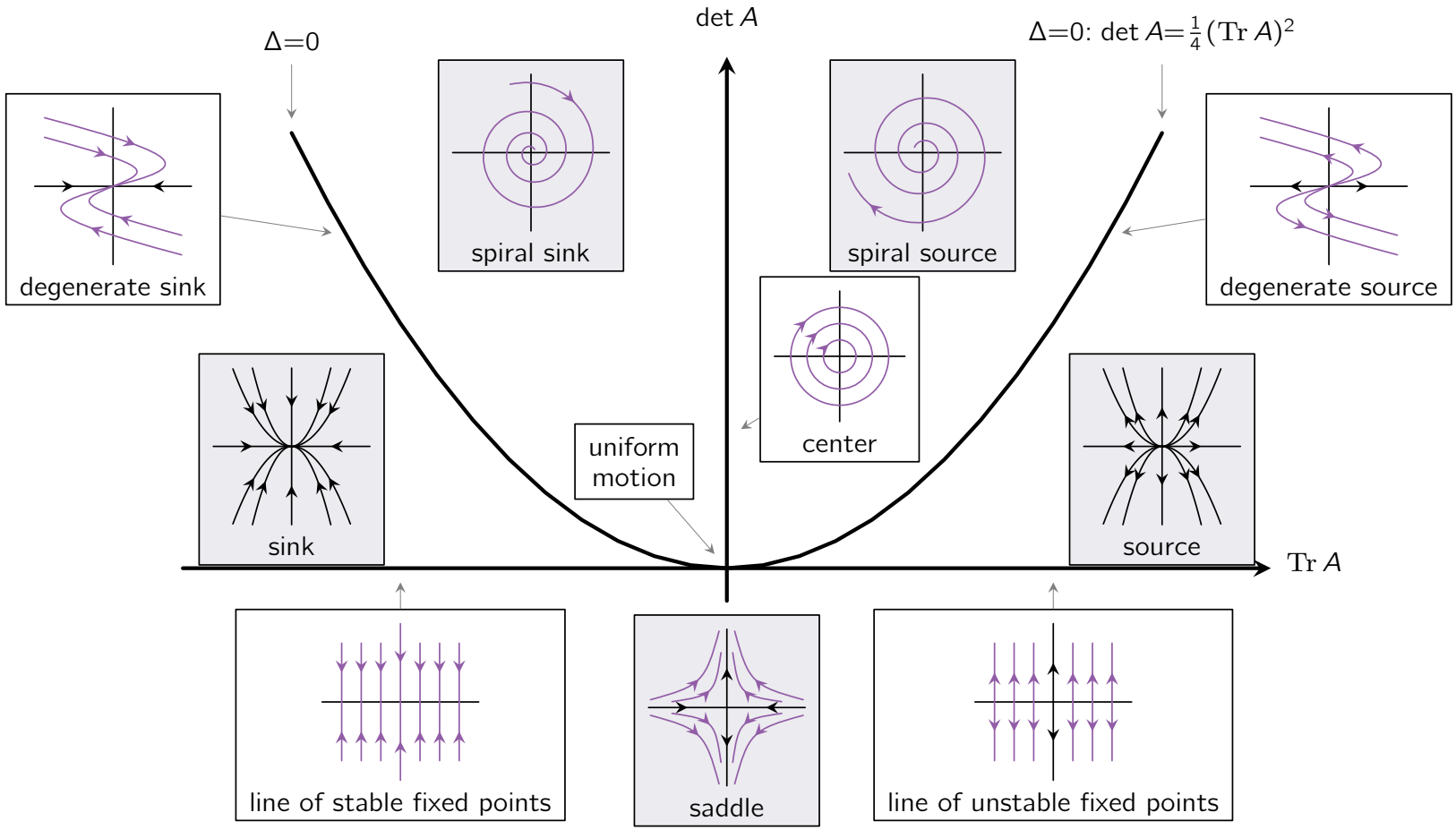

Figure: The Poincaré Phase-Plot diagram showcasing different behaviours. The shaded diagrams represent the region within the plot whereas the white boxes represent the behaviour when it is on the line.

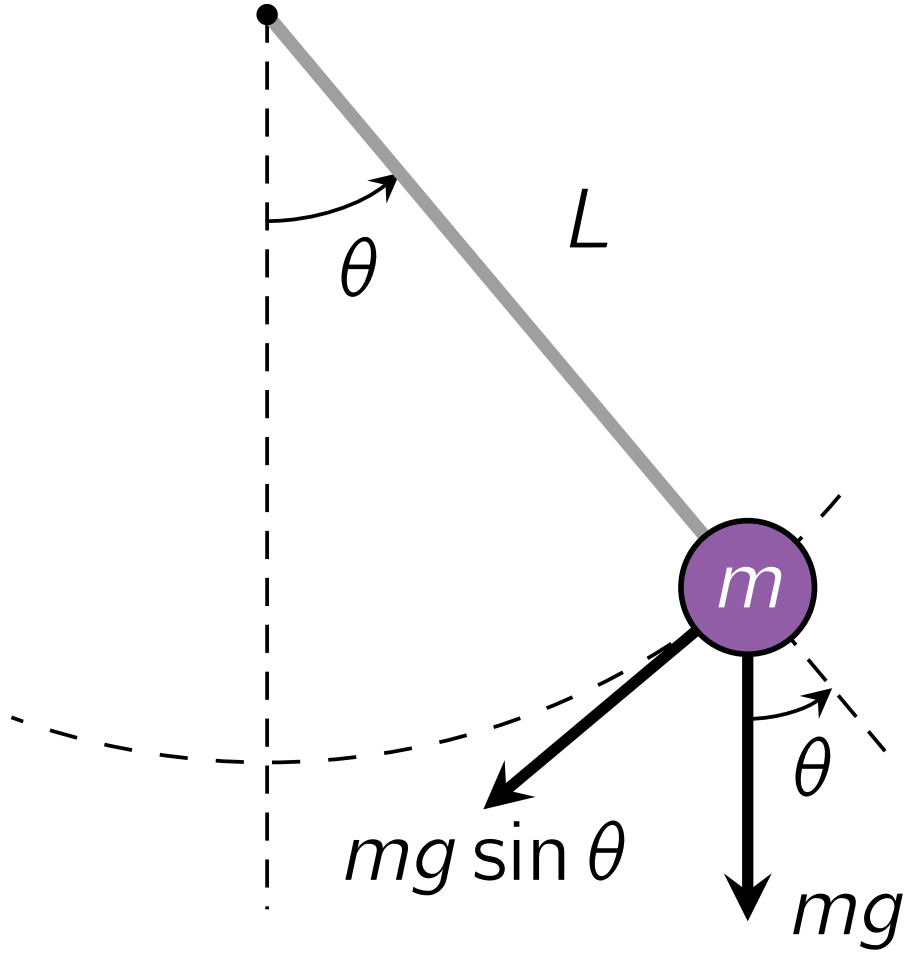

Figure: A simple pendulum in motion.

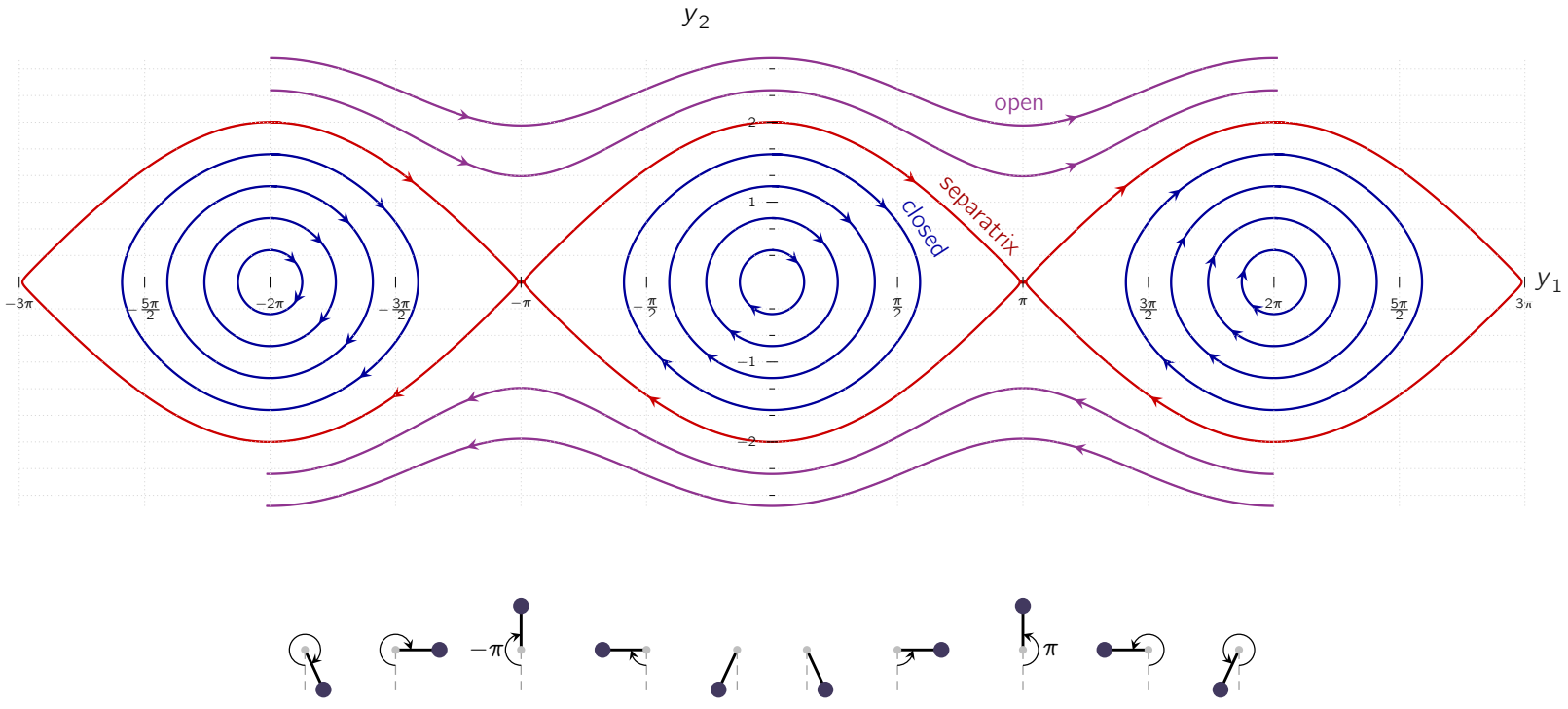

Figure: The Phase plane of a simple pendulum motion. Please observe the two (2) types of behaviour the system has which are centre node and saddle. If the system exhibits centre mode, it is considered a stable, whereas a saddle point, which can also be seen from the small pendulum diagrams below, are clearly unstable. Here the word seperatrix means the boundary which separates the two (2) modes of behaviour.

Chapter 2

Bibliography

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