This is a Very Important Title!

Person McSomething

(Dated: September 16, 2021)

This abstract is abstract.

If you want to learn more about using LaTeX, you should check UiO's official tutorials: https://www.mn.uio.no/ifi/tjenester/it/hjelp/latex/

If you are familiar with LaTeX and you want to learn more about the REVTeX4-1 document class, check: http://www.physics.csbsju.edu/370/papers/Journal_Style_Manuals/auguide4-1.pdf

PROBLEM 1

Vi har

$$\gamma \frac{d^2u(x)}{(dx)^2} = -Fu(x)$$

og skal vise at ved skalering blir dette

$$\frac{d^2u(\hat{x})}{(d\hat{x})^2} = -\lambda u(\hat{x})$$

hvor $\hat{x} = \frac{1}{L}$ og $\lambda = \frac{FL^2}{\gamma}$.
Vi starter med å se at

$$\frac{1}{dx} = \frac{d\hat{x}}{dx}\frac{d}{d\hat{x}} = \frac{d(\frac{x}{L})}{dx}\frac{d}{d\hat{x}} = \frac{1}{L}\frac{d}{d\hat{x}}$$

Så da får vi at

$$\frac{d^2u(x)}{dx^2} = \frac{1}{L^2}\frac{d^2u(\hat{x})}{d\hat{x}^2}$$

som gir oss

$$\frac{\gamma}{L^2}\frac{d^2u(\hat{x})}{d\hat{x}^2} = -Fu(\hat{x})$$

så flytter vi over og får

$$\frac{d^2u(\hat{x})}{d\hat{x}^2} = -\frac{L^2F}{\gamma}u(\hat{x})$$

så setter vi inn λ og får:

$$\frac{d^2u(\hat{x})}{d\hat{x}^2} = -\lambda\gamma u(\hat{x})$$

som vi skulle vise. $\square$

I. PROBLEM 2

Vi vet at $UU^T = UU^{-1} = I$ og at $v_j v_i = \delta_{ji}$. Vi skal så vise at for

$$w_j^T w_i = \delta_{ji}$$

for å vise at U tar var på ortonormaliteten til v_i under multiplikasjon.
Vi starter først med

$$w_j = Uv_j$$

og transponerer denne:

$$w_j^T = (Uv_j)^T = v_j^T U^T = v_j^T U^{-1}$$

så tar vi

$$w_j^T w_i = v_j^T U^{-1} U v_i = v_j^T I v_i = v_j^T v_i = \delta_{ji}$$

som vi skulle vise. $\square$

PROBLEM 3

Koden kan finnes i som prob3.cpp.
Vi konstruerer de analytiske egenverdiene som

$$\lambda_i = d+$$

II. METODE

III. RESULTATER

IV. DISKUSJON

V. CONKLUSJON

ACKNOWLEDGMENTS

I would like thank myself for writing this beautiful document.

REFERENCES

- Reference 1

- Reference 2

Appendix A: Name of appendix

This will be the body of the appendix.

Appendix B: This is another appendix

Tada.

Note that this document is written in the two-column format. If you want to display a large equation, a large figure, or whatever, in one-column format, you can do this like so:

This text and this equation are both in one-column format. [?]

$$\frac{-\hbar^2}{2m}\nabla^2\Psi + V\Psi = i\hbar\frac{\partial}{\partial t}\Psi \tag{B1}$$

Note that the equation numbering (this: B1) follows the appendix as this text is technically inside Appendix B. If you want a detailed listing of (almost) every available math command, check: https://en.wikibooks.org/wiki/LaTeX/Mathematics.

And now we're back to two-column format. It's really easy to switch between the two. It's recommended to keep the two-column format, because it is easier to read, it's not very cluttered, etc. Pro Tip: You should also get used to working with REVTeX because it is really helpful in FYS2150.

One last thing, this is a code listing:

```
This will be displayed with a cool programming font!
```

You can add extra arguments using optional parameters:

```
This will be displayed with a cool programming font!
```

You can also list code from a file using `lstinputlisting`. If you're interested, check https://en.wikibooks.org/wiki/LaTeX/Source_Code_Listings.

This is a basic table:

Table I. This is a nice table

Hey	Hey	Hey
Hello	Hello	Hello
Bye	Bye	Bye

You can a detailed description of tables here: https://en.wikibooks.org/wiki/LaTeX/Tables.

I'm not going to delve into Tikz in any level detail, but here's a quick picture:

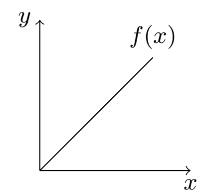

Figure 1. This is great caption

If you want to know more, check: https://en.wikibooks.org/wiki/LaTeX/PGF/TikZ.