FYS3150 - Project 2

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(Dated: 28. september 2020)

I. INTRODUCTION

II. THEORY

A. Unitary transformation

The transformed of a unitary matrix (U) is its inverse.

$$U^T = U^{-1}$$

From this we can prove that a unitary transformation preserves the orthonormality of vectors. Consider the set of orthonormal vectors $\{\mathbf{v}_i\}_i$ and the unitary transformation $\{U\mathbf{v}_i\}_i = \{\mathbf{w}_i\}_i$.

$$\begin{aligned}
\mathbf{w}_i^T \mathbf{w}_j &= (U\mathbf{v}_i)^T U\mathbf{v}_j \\
&= \mathbf{v}_i^T U^T U \mathbf{v}_j = \mathbf{v}_i^T \mathbf{v}_j \\
&= \delta_{i,j}
\end{aligned}$$

III. METHOD

IV. RESULTS

V. DISCUSSION

VI. CONCLUSION

ACKNOWLEDGMENTS

[1] N. J. Edin, K. E. Pitman, 2020, KOMPENDIUM FYS2150

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