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**Computational Physics I FYS3150/FYS4150**

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September 2020

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## 1 Abstract

## 2 Introduction

Since  $\mathbf{U}$  is orthogonal holds  $\mathbf{U}^T \mathbf{U} = I$

$$w_i^T w_j = (Uv_i)^T (Uv_j) = v_i^T U^T U v_j = v_i^T I v_j = v_i^T v_j \quad (1)$$