

**T.C.**

**YILDIZ TECHNICAL UNIVERSITY**

**SCIENCE AND ART FACULTY**

**PHYSICS DEPARTMENT**

**UNDERGROUND THESIS**

**THESIS TITLE**

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This graduation study was prepared by me under the supervision of Title Name SURNAME. In this study titled “..........................................”, I declare that I have obtained the necessary legal permissions for data collection and use in this study, that I have fully presented the information I received from other sources in the main text and references, that I have not distorted and/or forged the research data and results, and that I have acted in accordance with the principles of scientific research and ethics throughout my study. I accept any legal consequences in case of proof of the contrary of my statement.

İmza

Name SURNAME

TEŞEKKÜR

A thank you note will be written here.

Name SURNAME

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ÖZET

**Tez Başlığı**

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Physics Department

Graduation Study

Supervisor: Title Name SURNAME

In recent years, quantum computers have begun to make a name for themselves. There is a movement in world-famous companies such as IBM, DWave, Microsoft and Huawei designing their own quantum computers, the languages to be used and the algorithms to be run on these computers. For example, while Microsoft was designing the Q# language, DWave made its quantum computer available to those interested. On the other hand, IBM has made its quantum computer available in the cloud for free so that those interested can try its own algorithms.

After these developments, algorithms that were very difficult to test on classical computers began to be run on quantum computers. As a result, it is aimed for different perspectives to emerge in these new fields. The problem of finding prime factors, which is used in cryptology and is of great importance, is one of them. It is predicted that with the production and operation of post-quantum algorithms, asymmetric algorithms in cryptology will quickly fall into the background and eventually become history. According to these predictions, performing more than 280 operations, which are thought to be impossible to do with classical computers, will become commonplace with quantum computers. For example; Asymmetric encryption algorithms such as RSA and DSA, which are known for their reliability, and symmetric encryption algorithms such as AES and 3DES, which can take a very long time to break depending on the length of the number of keys and are therefore considered unbreakable, will be broken by quantum computers. This situation will lead to a new search in the field of cryptology, which is of vital importance for countries.

Here we encounter post-quantum algorithms. Quantum algorithms can be divided into three groups: Quantum search algorithms, quantum simulation algorithms and Fourier transform-based quantum algorithms. In this project, it was aimed to test quantum algorithms belonging to these three separate groups and compare their processing speed, efficiency and architectural structure with classical algorithms.

**Key Words:**

**YILDIZ TEKNİK ÜNİVERSİTESİ
FİZİK BÖLÜMÜ**

FEN BİLİMLERİ ENSTİTÜSÜ

1. GİRİŞ
	1. Alt Başlık

Daha önce yapılmış çalışmalara değinilerek bitirme çalışma konusu burada özetlenecektir.

### Alt Alt Başlık

Tablo 1.1 Tablo başlığı yazılacaktır

|  |  |
| --- | --- |
| Adım # | Açıklama |
| 1 |  |
| 2 |  |

Bir kuantum bilgisayar için her operasyonun 1 mikro saniye süreceği varsayılırsa 2048 bitlik sayıyı çarpanlarına ayırmak yalnızca 1 gün sürecektir ki klasik bilgisayarlarda 128 bitlik bir sayı bile çözülemez kabul ediliyor [1]



Şekil 1.1 Şekil başlıklarının ilk harfleri büyük diğer harfler küçük olmalıdır. Şekil altında ortalı yazılmalıdır.

#### Alt Alt Alt Başlık

Tablo 1.2 Örnek tablo

|  |  |
| --- | --- |
| Adım # | Açıklama |
| 1 |  |
| 2 |  |
| 3 |  |

* 1. Alt Başlık

|  |  |
| --- | --- |
|  | (1.1) |

1. GENEL BİLGİ
	1. Alt Başlık

Bitirme çalışması konusu ile ilgili genel bilgi verilecektir.

### Alt Alt Başlık

#### Alt Alt Alt Başlık

1. MATERYAL VE METOD
	1. Alt Başlık

Kullanılan malzeme ve deneysel yöntemlerle ilgili bilgiler verilecektir

**veya**

Teorik çalışmaysa, kullanılan metodlar ve çözülen denklem bilgileri burada verilecektir.

1. SONUÇ ve TARTIŞMA
	1. Alt Başlık

Burada yapılan çalışmada elde edilen veriler değerlendirilip kıyaslanarak, ulaşılan sonuçlar yorumlanacaktır.

KAYNAKÇA

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