# 附件四、技術說明表

## 抗輻射和具輻射容忍度晶片測試方法與裝置

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**市場及需求:**

隨著太空元件抗輻射的檢測技術逐漸發展成熟，為了因應日漸壯大的太空產業，各國相繼發展出相較於傳統使用高能粒子加速器還要快速以及實惠的脈衝雷射檢測技術來進行元件單事件效應之測試，然而使用脈衝雷射來進行晶片抗輻射檢測也遭遇了分析技術上的瓶頸，包括雷射與高能粒子之間的量化對照，以及雷射會遭到元件上的金屬層阻擋的影響。

**技術摘要(含成果):**

建立一套用脈衝雷射對晶片進行輻射效應測試的分析方式，首先針對客製化之待測元件建立脈衝雷射單事件效應照射實驗，並透過此實驗來取得實驗結果之相關數據，再根據這些實驗數據進行待測晶片的模擬建置以及進行模擬分析，並且將此模擬分析所獲得的結果用來與待測晶片在模擬所獲得的結果進行對照，透過兩者的結果對照可以看到本分析結果是與結果相近的，從而驗證了此分析方式的可行性，進而建立起了脈衝雷射對晶片進行輻射效應測試分析方式。

**優勢:**

1. 可以還原晶片太空中實際受到輻射的影響。2. 照射環境相對粒子加速器安全。3. 檢測速度快且成本相對便宜。4.可以針對單一電路進行檢測

**競爭產品:無此產品**

**專利現況:**

本研究團隊具有數十年研究經驗...

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# Testing Method and Instrument for Radiation Hardness and Radiation Tolerance IC

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**Experience:**
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**Market Needs:**

As the technology for testing the radiation resistance of space components matures, to cater to the growing space industry, countries have successively developed pulse laser testing techniques that are faster and more cost-effective than traditional high-energy particle accelerators for testing single-event effects of components. However, using pulse lasers for radiation resistance testing of chips has encountered bottlenecks in analysis techniques. These include quantifying the comparison between lasers and high-energy particles, and the influence of metal layers on components blocking the lasers. 。

**Our Technology:**

To establish an analytical method for assessing the radiation effects of pulsed laser testing on chips, an experimental setup is first designed specifically for the custom test components, employing pulsed laser single event effect exposure. Through this experiment, relevant data from the results are obtained. Based on this experimental data, simulations of the test chips are constructed and analyzed. The outcomes from this simulation analysis are then compared with results obtained from simulations of the test chips. By contrasting these two sets of results, it can be observed that the findings from this study closely align with the outcomes. This demonstrates the feasibility of the proposed analytical method, thereby establishing a technique for analyzing the radiation effects of pulsed lasers on chips.

**Strength:**

It can simulate the actual radiation effects on chips in space.
The irradiation environment is safer compared to particle accelerators.
The testing speed is fast and the cost is relatively low.
It can test individual circuits. The main advantages of this technology lie in its high

**Competing Products: No such product**

**Intellectual Properties:**

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