



**Research Institute for Radiation Biology and Medicine  
Hiroshima University**

Research Institute for Radiation Biology and Medicine  
Hiroshima University  
1-2-3 Kasumi, Minami-ku,  
Hiroshima 734-8553, JAPAN  
Phone +(81)82-257-5186 · Fax +(81)82-257-1703

---

27 May 2020

## Opponent Report

Author of the thesis: Mr. Martin Kakona  
Title of the thesis: Research on cosmic rays on board aircraft using a newly developed PIN diode detector  
Opponent: Prof. Hiroshi Yasuda (Hiroshima University, Japan)

I'm sending herewith a report of my assessment on the PhD thesis submitted by Mr. Martin Kakona, a graduate student at the Faculty of Nuclear Sciences and Physical Engineering of the Czech Technical University in Prague.

### **Point 1: How much the topic of the thesis is up to date?**

The radiation detectors coupled with dosimetry techniques investigated by the author were original and, with some additional efforts for technical improvement, those instruments would be newly employed as practical tools dedicated to aviation dosimetry for aircrew and passengers. The author explained well such background situation and research needs with citations of adequate references.

### **Point 2: What are the methods applied in the thesis?**

The orderly procedures taken by the author to achieve the goals were highly evaluated. The background situations were clearly explained in Chapter 1 and the main goals were concisely indicated in Chapter 2, which made it easy to understand why the author employed the methods for measurements and analyses described in the following chapters. Actually, the author well described the complicated technical aspects in detail.

### **Point 3: Has the goal of the thesis been achieved?**

I felt that the main goals were well achieved through the devoted work of detector development, onboard measurements and appropriate analyses based on the broad knowledge of the author. Those efforts are highly evaluated.

**Point 4: What is the scientific value of the results?**

The author presented a plenty of original and valuable findings on both measurements and analyses. I felt that all the data presented in the thesis were accurate and credible. Those results followed by sound discussions were judged to have a high-level scientific value.

**Point 5 : What is your overall evaluation on the thesis?**

I confirm that the thesis of Martin Kakona is scientifically sound and its presentation and defense are highly recommended.

Sincerely,

Hiroshi Yasuda, Prof., Dr.  
Research Institute for Radiation Biology and Medicine  
Hiroshima University  
1-2-3 Kasumi, Minami-ku  
Hiroshima 734-8553, Japan.  
Tel: +81-(0)82-257-5872  
Fax: +81-(0)82-257-5873  
E-mail: [hyasuda@hiroshima-u.ac.jp](mailto:hyasuda@hiroshima-u.ac.jp)