

**VI Scuola Nazionale
"Rivelatori ed Elettronica per
Fisica delle Alte Energie,
Astrofisica, Applicazioni
Spaziali e Fisica Medica"**

Report of Contributions

Contribution ID: 28

Type: **Oral**

Single Event Upsets Analysis of CMOS SRAM cell for Space Applications

This paper concentrates on SRAM cell response in LEO radiation environment. The SEU rates of 65nm, 45nm and 32nm bulk CMOS technology based Static RAM cells were evaluated. The impact of technology scaling on SEU rates, LET threshold and cross-section per bit/device were compared with SOI CMOS SRAM cells. Dose-Depth analysis has been performed for various orbital inclinations and shield thicknesses. To characterize the robustness of scaled SRAM cells, state of the art visual TCAD/Genius, GSEAT/VisualParticle toolkit, Microwind3.1 have been utilized whereas LEO radiation environment was determined with OMERE-Trad software.

Primary authors: Mr SAJID, Muhammad (CIIT Islamabad); Prof. FRANK, Torres (DEE UFMG Brazil)

Co-authors: Dr SHAHRUKH, Agha (CIIT Islamabad); Prof. EHSAN ULLAH, Khan (CESET Islamabad); Prof. CHECHENIN, Nikolay (SINP MSU Russia)

Presenters: Mr SAJID, Muhammad (CIIT Islamabad); Prof. CHECHENIN, Nikolay (SINP MSU Russia); Prof. FRANK, Torres (DEE UFMG Brazil)

Contribution ID: **33**

Type: **not specified**

Prova 1

Contribution ID: **36**

Type: **not specified**

Introduzione al danno da radiazione: concetti base e quantità fisiche

Monday, March 23, 2015 2:00 PM (1h 40m)

Presenter: WYSS, Jeffery (PD)

Contribution ID: 37

Type: **not specified**

Dalla giunzione pn al rivelatore a semiconduttore

Presenter: Dr SIMI, Gabriele (PD)

Contribution ID: **38**

Type: **not specified**

Dalla giunzione pn al rivelatore a semiconduttore

Monday, March 23, 2015 4:10 PM (1h 40m)

Presenter: Dr SIMI, Gabriele (PD)

Contribution ID: 40

Type: **not specified**

Danno da radiazione macroscopico in rivelatori a semiconduttore

Tuesday, March 24, 2015 9:00 AM (1h 40m)

Presenter: CIVININI, Carlo (FI)

Contribution ID: 41

Type: **not specified**

Danno da radiazione macroscopico in rivelatori a semiconduttore

Tuesday, March 24, 2015 11:10 AM (1h 40m)

Presenter: BRUZZI, Mara (FI)

Contribution ID: 42

Type: **not specified**

Elettronica di front-end per tracciatori in silicio

Wednesday, March 25, 2015 9:00 AM (1h 40m)

Presenter: RE, Valerio (PV)

Contribution ID: 43

Type: **not specified**

Danno da radiazione ionizzante ed Effetti da Evento Singolo in dispositivi e circuiti elettronici

Wednesday, March 25, 2015 11:10 AM (1h 40m)

Presenter: RATTI, Lodovico (PV)

Contribution ID: 44

Type: **not specified**

Attività di ricerca sugli Effetti da Evento Singolo al CIAE

Wednesday, March 25, 2015 2:00 PM (50 minutes)

Presenter: Prof. GUO, Gang (China Institute for Atomic Energy)

Contribution ID: 45

Type: **not specified**

Programmi e ricerche sull'elettronica per lo Spazio in Brasile

Wednesday, March 25, 2015 2:50 PM (50 minutes)

Presenter: Prof. MANEA, Silvio (INPE, Brasile)

Contribution ID: 46

Type: **not specified**

Componenti EEE: test di resistenza alle radiazioni e attività di R&D nell'Agencia Spaziale Europea

Wednesday, March 25, 2015 4:10 PM (50 minutes)

Presenter: BOATELLA POLO, Cesar (ESA ESTEC)

Contribution ID: 47

Type: **not specified**

Programmi e ricerche sull'elettronica per lo Spazio in Italia

Contribution ID: 48

Type: **not specified**

La visione dell'industria sull'elettronica per applicazioni in ambiente spaziale: strategia di protezione alle radiazioni

Wednesday, March 25, 2015 5:00 PM (50 minutes)

Presenters: SARNO, Mariolina (Thales Alenia Space); Dr MANCINI, Roberta (Thales Alenia Spac, Italia)

Contribution ID: 49

Type: **not specified**

Particelle cariche: aspetti di rilievo nello Spazio e in terapia

Friday, March 27, 2015 9:00 AM (50 minutes)

Presenter: Dr DURANTE, Marco (GSI, Germania)

Contribution ID: 50

Type: **not specified**

Rivelatori di frammentazioni di particelle: applicazioni nello Spazio e in terapia

Friday, March 27, 2015 9:50 AM (50 minutes)

Presenter: PATERA, Vincenzo (ROMA1)

Contribution ID: 51

Type: **not specified**

Acceleratori di particelle in bio-medicina

Friday, March 27, 2015 11:10 AM (50 minutes)

Presenter: CHERUBINI, Roberto (LNL)

Contribution ID: 52

Type: **not specified**

Dalla microdosimetria alla nanodosimetria

Friday, March 27, 2015 12:00 PM (50 minutes)

Presenter: CONTE, Valeria (LNL)

Contribution ID: 62

Type: **not specified**

Rivelatori a pixel monolitici per Fisica delle Alte Energie

Tuesday, March 24, 2015 2:00 PM (50 minutes)

Presenter: Dr SNOEYS, Walter Snoeys (CERN)

Contribution ID: 63

Type: **not specified**

Rivelatori a pixel con tecnologia CMOS ad alta tensione

Tuesday, March 24, 2015 2:50 PM (50 minutes)

Presenter: DARBO, Giovanni (GE)

Contribution ID: 64

Type: **not specified**

Lfoundry: Industria Italiana di semiconduttori: settori di interesse, tecnologia, operatività e attività di punta

Tuesday, March 24, 2015 4:10 PM (50 minutes)

Presenter: MARGUTTI, giovanni (LFoundry srl)

Contribution ID: 65

Type: **not specified**

Rivelatori CMOS a Pixel Attivi a LFoundry: flusso di produzione, fattori di qualità, e criticità da affrontare dalla progettazione alla realizzazione del dispositivo

Tuesday, March 24, 2015 5:00 PM (50 minutes)

Presenter: MARGUTTI, giovanni (LFoundry srl)

Contribution ID: **66**

Type: **not specified**

Results on FBK 3D pixel detectors for CMS

Thursday, March 26, 2015 9:30 AM (20 minutes)

Presenter: RAVERA, Fabio (TO)

Session Classification: RADFAC Day

Contribution ID: 67

Type: **not specified**

Radiation hardness study on double-sided 3D sensors after proton and neutron irradiation

Thursday, March 26, 2015 9:50 AM (20 minutes)

Presenter: Mr SULTAN, D M S (University of Trento)

Session Classification: RADFAC Day

Contribution ID: 68

Type: **not specified**

A radiation qualification procedure for nanosatellites and High Energy applications at the CHARM facility at CERN

Thursday, March 26, 2015 10:10 AM (20 minutes)

Presenter: Mr SECONDO, RAFFAELLO (CERN)

Session Classification: RADFAC Day

Contribution ID: **69**

Type: **not specified**

Modelling od diamond devices with TCAD tools

Thursday, March 26, 2015 9:10 AM (20 minutes)

Presenter: MOROZZI, Arianna (PG)

Session Classification: RADFAC Day

Contribution ID: 70

Type: **not specified**

A method for measuring the effect of total ionising dose on temperature coefficients of semiconductor devices

Thursday, March 26, 2015 10:30 AM (20 minutes)

Presenter: Mr HOFMAN, Jiri (Cobham RAD Solutions)

Session Classification: RADFAC Day

Contribution ID: 71

Type: **not specified**

Study of a thermal annealing approach for very high total dose environments

Thursday, March 26, 2015 11:20 AM (20 minutes)

Presenter: Mrs DHOMBRES, Stephanie (Universite Montpellier/Systheia)

Session Classification: RADFAC Day

Contribution ID: 72

Type: **not specified**

Evaluation of neutron-SEB thresholds of COTS power MOSFETs with TCAD simulations

Thursday, March 26, 2015 11:40 AM (20 minutes)

Presenter: Mr GIORDANO, Carlo (DIMES - UNICAL)

Session Classification: RADFAC Day

Contribution ID: 73

Type: **not specified**

Radiation-induced single event transients modeling on ultra-nanometric technologies

Thursday, March 26, 2015 12:00 PM (20 minutes)

Presenter: Mr DU, Boyang (Politecnico di Torino)

Session Classification: RADFAC Day

Contribution ID: 74

Type: **not specified**

Radiation vulnerability in 65 nm CMOS I/O transistors exposed to ionizing radiation

Thursday, March 26, 2015 12:20 PM (20 minutes)

Presenter: DING, Lili (PD)

Session Classification: RADFAC Day

Contribution ID: 75

Type: **not specified**

Noise performance of 65 nm CMOS transistors exposed to ionizing radiation

Thursday, March 26, 2015 12:40 PM (20 minutes)

Presenter: Ms RICEPUTI, Elisa (Università degli Studi di Bergamo)

Session Classification: RADFAC Day

Contribution ID: 76

Type: **not specified**

Use of FPGAs in radiation areas in HEP experiments and colliders

Thursday, March 26, 2015 4:10 PM (20 minutes)

Presenter: GRASSI, tullio (FNAL)

Session Classification: RADFAC Day

Contribution ID: 77

Type: **not specified**

A new analog front-end for the HL_LHC of the CMS pixel detector

Thursday, March 26, 2015 4:30 PM (20 minutes)

Presenter: MONTEIL, Ennio (TO)

Session Classification: RADFAC Day

Contribution ID: 78

Type: **not specified**

Radiation hardness techniques for the digital parts of the chip pALPID

Thursday, March 26, 2015 4:50 PM (20 minutes)

Presenter: PANATI, Serena (TO)

Session Classification: RADFAC Day

Contribution ID: 79

Type: **not specified**

Radiation effects on semiconductor laser diodes

Thursday, March 26, 2015 5:10 PM (20 minutes)

Presenter: Dr MARCELLO, Giulia (DIEE - Dipartimento di Ingegneria Elettrica ed Elettronica)

Session Classification: RADFAC Day

Contribution ID: 80

Type: **not specified**

Common problems in time domain reflectometry attacked with the ramer-douglas-peucker algorithm: from radiation effects on optical fibres to coaxial level monitoring

Thursday, March 26, 2015 5:30 PM (20 minutes)

Presenter: Mr CORDELLA, Francesco (ENEA)

Session Classification: RADFAC Day

Contribution ID: **81**

Type: **not specified**

Final remarks and conclusions

Thursday, March 26, 2015 5:50 PM (10 minutes)

Session Classification: RADFAC Day

Contribution ID: **82**

Type: **not specified**

Welcome and introduction to teh RADFAC 2015 Day

Thursday, March 26, 2015 9:00 AM (10 minutes)

Session Classification: RADFAC Day

Contribution ID: **83**

Type: **not specified**

A short review of INFN irradiation facilities

Thursday, March 26, 2015 2:00 PM (20 minutes)

Presenter: BISELLO, Dario (PD)

Session Classification: RADFAC Day

Contribution ID: **84**

Type: **not specified**

The SIRAD irradiation facility at LNL

Thursday, March 26, 2015 2:20 PM (20 minutes)

Presenter: SILVESTRIN, Luca (PD)

Session Classification: RADFAC Day

Contribution ID: 85

Type: **not specified**

High spatial resolution external beams

Thursday, March 26, 2015 2:40 PM (20 minutes)

Presenter: GIUNTINI, Lorenzo (FI)

Session Classification: RADFAC Day

Contribution ID: **86**

Type: **not specified**

Irradiations at the INFN-LABEC facility in Florence

Thursday, March 26, 2015 3:00 PM (20 minutes)

Presenter: GIUNTINI, Lorenzo (FI)

Session Classification: RADFAC Day

Contribution ID: **87**

Type: **not specified**

The "LABORATORIO ACCELERATORE

Thursday, March 26, 2015 3:20 PM (20 minutes)

Presenter: DI CAPUA, Francesco (INFN)

Session Classification: RADFAC Day