



European Working Group
Non-Lethal Weapons

Programme

9th European Symposium on
Non-Lethal Weapons
May 08–10, 2017

Stadthalle Ettlingen, Germany

9th European Symposium on Non-Lethal Weapons



Fraunhofer

ICT

Programme Committee and National Points of Contact

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Chairman

Massimo Annati

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9th European Symposium on Non-Lethal Weapons

Non-Lethal Weapons are becoming more and more established within military and police operations reducing the risk of unnecessary fatalities and undesirable outcomes.

The bi-annual NLW Symposium which was first held in 2000 is a welcome opportunity to take stock of significant technical developments in the NLW community and draw conclusions from operational uses. The Symposium is an ideal forum to develop requirements and discuss ideas to advance NLW technology and encourage its safe and effective use by the military and police.

The 2017 Symposium will provide a valuable opportunity to hear from and discuss the many aspects of this subject with scientists, operational practitioners and subject matter experts. The topics of the Symposium will cover the following areas of interest:

- Acceptability and lessons learned
- Technical advances and new methodologies
- Testing/assessment/modelling of systems to determine effectiveness and safety
- Operational utility and training
- Human effects

The above topics are only a guide and the organisers are willing to consider papers on all aspects of this wide subject.

Chairman of the Symposium
Massimo Annati
Italian Navy (ret'd), Milano

General Information

REGISTRATION

Online:

www.ict.fraunhofer.de/nlw2017
(or return the enclosed registration form)

Registration fees (incl. proceedings, coffee breaks, lunch), depending on arrival of the registration at the ICT:

- Registration up to
March 30, 2017: € 990,-
(incl. 19% VAT)
- Registration up to
April 24, 2017: € 1.200,-
(incl. 19% VAT)

Participation cannot be guaranteed for registrations arriving after April 24, 2017.

The fee has to be paid **upon receipt of the invoice** by remittance to the account given on the invoice.

CANCELLATION POLICY

€ 400.- will be charged for cancellations after
April 25, 2017. No-shows will be charged the whole fee.

ACCOMMODATION

<http://hessen.nethotels.com/ICT/English/HotelSearch.htm>

CONFERENCE OFFICE

Foyer of the Stadthalle Ettlingen

(Friedrichstraße, 76275 Ettlingen)

Monday, May 8, 15.00 h till

Wednesday, May 10, 18.00 h

Phone +49-(0)72 43/101-158

Fax +49-(0)72 43/101-157

CHECK IN/WELCOME RECEPTION

Please check in at the Conference Office on

Monday, May 8 between 15.00 and 20.00 h.

All participants are cordially invited to the **Welcome Reception** on the same day, **18.00 h – 21.00 h** in the foyer of the Stadthalle Ettlingen.

CONFERENCE LANGUAGE

English

PROCEEDINGS

One copy is included in the registration fee. Additional copies cost **€ 70,-** (Subscription price during the conference **€ 50,-**).

Programme

Monday, May 8

18.00 – 21.00

Welcome Reception

Tuesday, May 9

08.00 – 08.45

Registration

08.45 – 09.00

Welcome and Opening

M. Annati
Chairman of the Symposium

09.00 – 09.30

V1

KEYNOTE

L. D'Orsi
Deputy Assistant Commissioner
Metropolitan Police, UK

Session 1 – Human Effects I

Session Chair: U. Sundberg
FOI, Tumba, SE

09.30 – 09.55

V2

THE SHOCK OF THE NEW: THE COMPARATIVE SAFETY AND EFFECTIVENESS OF THE TASER X26 AND TASER INTERNATIONAL'S NEW GENERATION „SMART WEAPONS“

R.D. Sheridan
Defence Science and Technology
Laboratory, Porton Down, UK

09.55 – 10.20

V3

COMPARISON OF CONDUCTED ELECTRICAL WEAPON SAFETY AND EFFECTIVENESS: OLD VS. NEW TECHNOLOGY

J.D. Ho, J.R. Miner
University of Minnesota Hennepin
County Medical Center, USA
D.M. Dawes
Lompoc Valley Medical Center, USA
S.N. Kunz
University Salzburg, A

10.20 – 10.45

Coffee Break

Session 2 – Testing

Session Chair: A. Papy

Royal Military Academy, Brussels, B

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|---------------|----|--|
| 10.45 – 11.10 | V4 | STUN GUN
D.P. Dawson
Carleton University, Ottawa, CAN |
| 11.10 – 11.35 | V5 | CAST INVESTIGATIONS ON REPLACEMENT OF TASER X26
G. Dean
Home Office CAST, St. Albans, UK |
| 11.35 – 12.00 | V6 | A SUITABILITY STUDY OF USING KINETIC ENERGY NON-LETHAL WEAPON TO NEUTRALIZE LOW SMALL UNMANNED AERIAL VEHICLES
C. Robbe, A. Papy, N. Borrey
Royal Military Academy, Brussels, B |
| 12.00 – 13.00 | | Lunch Break |
| 13.00 – 14.00 | | Poster Presentation (orally)
Chairman: R. Newman, G. Smith |
| 14.00 – 14.30 | | Poster Session (Foyer) |

Session 3 – Operational I

Session Chair: R. Newman

Home Office CAST, St. Albans, UK

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|---------------|----|---|
| 14.30 – 14.55 | V7 | THE USE OF VIRTUAL REALITY SIMULATORS TO ENHANCE LAW ENFORCEMENT TRAINING
S.L. Hayes, P.E. Lobur
US Customs and Border Protection,
Harpers Ferry, USA |
| 14.55 – 15.20 | V8 | THE UTILITY OF THE TASER FOR LAW ENFORCEMENT IN THE NETHERLANDS: A PROSPECTIVE POLICE TECHNOLOGY ASSESSMENT STUDY
S. Orbons,
O. Adang
Netherlands Police Academy, Eindhoven, NL |

15.20 – 15.45 **V9** **POLICE USE OF NON-LETHAL WEAPONS:
OPERATIONAL, MEDICAL AND BALLISTIC
ANALYSIS OF SOME REAL CASES**
E. Lemaire
Universite de Liege, B
A. Papy, C. Robbe
Royal Military Academy, Brussels, B
D.B., P.H.
Peloton Anti Banditisme, Special Unit
Liege Police, B

15.45 – 16.15 **Coffee Break**

Session 4 – International Projects

Session Chair: I. Wieser
Armament and Defence Technology
Agency, Vienna, A

16.15 – 16.40 **V10** **GENERAL PRESENTATION ON
SUBCOP**
A. Pettersson
FOI, Grindsjön, SE

16.40 – 17.05 **V11** **OVERVIEW OF NATO NON-LETHAL
WEAPONS ACTIVITIES**
J. Nelson
American Systems Corp.,
Dumfries, USA

17.05 – 17.30 **V12** **EXAMINATION OF RANGE DELIVERY
OF NON-LETHAL CAPABILITIES:
FIRST RESULTS**
G. Hubricht
Rheinmetall Waffen Munition GmbH,
Unterlüß, D

Wednesday, May 10

Session 5 – Operational II

Session Chair: S. Orbons
Netherlands Police Academy,
Eindhoven, NL

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|---------------|-----|---|
| 09.00 – 09.25 | V13 | THE ATTENUATING ENERGY PROJECTILE: AN ANALYSIS OF OPERATIONAL FIRINGS
G. Smith, C. Malbon
Home Office CAST, St. Albans, UK |
| 09.25 – 09.50 | V14 | THE USE OF NLW IN MARITIME OPERATIONS: LESSONS LEARNED FROM THE NATO NON-LETHAL TECHNOLOGY EXERCISES
A. Papy, C. Robbe
Royal Military Academy, Brussels, B |
| 09.50 – 10.15 | V15 | THE USE OF NLW IN LAND OPERATIONS: LESSONS LEARNED FROM THE NATO NON-LETHAL TECHNOLOGY EXERCISES
A. Papy, C. Robbe
Royal Military Academy, Brussels, B |
| 10.15 – 10.45 | | Coffee Break |
| 10.45 – 12.00 | | Open Discussion
Chairman: M. Annati
Milano, I |
| 12.00 – 13.00 | | Lunch Break |

Session 6 – Innovation & Design

Session Chair: J. Neutz
Fraunhofer ICT, Pfinztal, D

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|---------------|-----|--|
| 13.00 – 13.25 | V16 | AN EFFECTS-BASED DESIGN APPROACH TO NLW REQUIREMENTS GENERATION
J.L. Fleming
USAF AFRL, Fort Sam Houston, USA |
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13.25 – 13.50 **V17** **CONCEPT OF NON-LETHAL AMMUNITION WITH „ACTIVE SHELL“**
V.V. Elfimov, V.V. Korenkov, D.P. Levin,
V.V. Selivanov
Bauman Moscow State Technical
University, Moscow, RUS

13.50 – 14.15 **V18** **FRESH IDEAS OF PSM SYSTEMS FOR NLW**
V. Savostyanov
Independent Researcher, Moscow, RUS
V. Selivanov, D. Levin
Bauman Moscow State Technical
University, Moscow, RUS

14.15 – 14.45 **Coffee Break**

Session 7 – Human Effects II

Session Chair: G. Smith

Home Office CAST, St. Albans, UK

14.45 – 15.10 **V19** **PROBABILITY OF CAUSING A FALL BY IMPACT**
G. Cooke
US Army ARDEC, Picatinny Arsenal,
USA
A. Ritter
Stevens Institute of Technology,
Hoboken, USA

15.10 – 15.35 **V20** **ASSESSING RISK OF SIGNIFICANT INJURY FROM MULTIPLE STIMULI ENGAGEMENTS**
E.B. Beier
USAF AFRL, Fort Sam Houston, USA

15.35 – 16.00 **V21** **CHARACTERIZING CARDIAC QT INTERVAL AFTER ELECTRICAL MUSCULAR INCAPACITATION**
J.A. Gibbons, B.B. Lupfer, A. Ashworth
USAF AFRL, Fort Sam Houston, USA
A.J. Mojica
KBRwyle Inc., USA
M.E. Peele
US Army MEDCOM, USA
D.F. Varner
Thermo Fisher Scientific, USA

16.00 – 16.15 **Closing Remarks**
M. Annati
Chairman of the Symposium

Poster Programme

Posters will be presented during the whole Symposium. A special oral Poster Presentation will take place on Tuesday, May 9, 13.00 – 14.00 h, followed by a Poster Session, 14.00 – 14.30 h, at the Poster Boards in the Foyer. During this time authors should present their work with one slide in the auditorium (maximum speaking time 5 min) and afterwards be present at their Poster.

- P22** **MICROWAVE PULSED POWER SENSOR AND DETECTION SYSTEM**
P. Fiala, P. Drexler, M. Steinbauer
Brno University of Technology, Brno, CZ
- P23** **EMG SYSTEM PACIFICATION CROWD**
P. Fiala, M. Hanzelka, M. Cap
Brno University of Technology, Brno, CZ
- P24** **INHIBITORS FOR NON-LETHAL ANTI-MATERIAL APPLICATIONS**
J. Bernewitz, T. Armbrust, M. Hummel,
M. Klemenz, E. Walschburger
Fraunhofer ICT, Pfinztal, D
- P25** **UNIVERSITY EDUCATIONAL PROGRAM „NON-LETHAL WEAPONS“ FOR MECHANICAL ENGINEERS**
V.V. Selivanov, D.P. Levin
Bauman Moscow State Technical University,
Moscow, RUS
- P26** **A LASER-BASED LESS-THAN-LETHAL WEAPON FOR INDIVIDUAL DIS-ORIENTATION/ DISSUATION**
J. Tyrer
Laser Optical Engineering Ltd., Derbyshire, UK
- P27** **RF SAFE-STOP: AN ELECTROMAGNETIC NLW**
M.J. Duffield, S. Guy, M. Hicks, A.M. Wood
e2v technologies ltd, Chelmsford, UK
- P28** **IMPACT OF SPARK ELECTRICITY CONDUCTIVE GUN USE ON CARDIOVASCULAR PARAMETERS OF HEALTHY VOLUNTEERS**
C. Scherr, R. Leborato Guerra, A.C. Campos de Carvalho, L.H. Loyola,
L. Juacaba Belem
Fundacao Pro-Coracao FUNDACOR,
Rio de Janeiro, BR

- P29** **MILITARY EMPLOYMENT OF NON-LETHAL WEAPONS AND CIVILIAN CASUALTIES DURING MILITARY OPERATIONS: A CONCEPTUAL GAP**
O. Fridman
King's College, London, UK
- P30** **SUBCOP – PROTECTION AGAINST SUICIDE BOMBER ATTACKS**
J. Bernewitz, T. Armbrust, M. Hummel,
M. Klemenz, J. Neutz, R. Roussel Garcia
Fraunhofer ICT, Pfinztal, D
- P31** **PEPPERBALL .68 VARIABLE SPEED SYSTEM (VKS) NON-LETHAL PNEUMATIC LAUNCHER**
J. Fleitz
PepperBall® United Technical Systems LLC,
Lake Forest, USA
- P32** **USE OF A SPECIALISED RULE SYSTEM, INCLUDING A NLWS SET, IN TTXS**
M. Filippi, M. Lanfranco, R. Carruba
Milano, I
- P33** **EDA – FACILITATOR IN DEVELOPING NON-LETHAL CAPABILITIES (NLC) AND THEIR EMPLOYMENT IN CSDP MILITARY OPERATIONS**
C. Ciocirlan
European Defence Agency (EDA), Brussels, B
- P34** **AN IN VITRO APPROACH TO EVALUATING OPIOID RECEPTOR SUBTYPE SPECIFICITY**
M. Feasel
United States Army ECBC,
Aberdeen Proving Ground, USA

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76138 Pfinztal
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**MUST BE PUT
INSIDE ENVELOPE**

Registration form

9th European Symposium on Non-Lethal Weapons May 08 – 10, 2017
Stadthalle Ettlingen, Germany
Online registration: www.ict.fraunhofer.de/nlw2017

.....
Last name

.....
Company

.....
First name

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Postal address

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Title / Position

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The registration fee will be paid upon receipt of the invoice.

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It is agreed that pictures taken during this event may be published.

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E-mail

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VAT-No. (European countries only)

Phone no.

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Date, Signature

Fax no.

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Fax +49 (0) 721 / 4640-120

Participation (please tick)



Welcome Reception

May 08, 18.00 – 21.00 h

Ettlingen City Plan I How to find the venue

Ettlingen is located in the vicinity of Karlsruhe, approx. 120 km south of Frankfurt / Frankfurt International Airport just beside the Autobahn A5.

Other airports are Strasbourg, France (approx. 100 km) and Stuttgart (approx. 90 km). From the airport it is possible to travel by train (approx. 1 hour) to Karlsruhe Hauptbahnhof (Main Station), then take the "Stadtbahn" (tram) S1 or S11, direction Ettlingen or Ittersbach.

Exit the tram at the stop "Ettlingen Stadt" (Stadtbahnhof Ettlingen) (journey time approx. 15 min).

After a short walk (approx. 10 min) you reach the "Stadthalle Ettlingen" (see map).



Karlsruhe, A5, Frankfurt Durlach, B3



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