

## Peer reviewed publications

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### **Influence of post-HIP temperature on microstructural and optical properties of pure MgAl<sub>2</sub>O<sub>4</sub> spinel: From opaque to transparent ceramics**

C. GAJDOWSKI, J. BÖHMLER, Y. LORGOUILLOUX\*, S. LEMONNIER, S. D'ASTORG\*, E. BARRAUD, A. LERICHE\*

*Journal of the European Ceramic Society* 37 (2017) 5347-5351

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[doi.org/10.1016/j.jeurceramsoc.2017.07.031](https://doi.org/10.1016/j.jeurceramsoc.2017.07.031)

R-01/13/13/000/0/00-00/PR-218/2018

### **Optimisation of the mechanical properties of a Spark Plasma Sintered (SPS) magnesium alloy through a post-sintering in-situ precipitation treatment**

M. MONDET, E. BARRAUD, S. LEMONNIER, N. ALLAIN\*, T. GROSDIDIER\*

*Journal of Alloys and Compounds* 698 (2017) 259-266

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[dx.doi.org/10.1016/j.jallcom.2016.12.066](https://dx.doi.org/10.1016/j.jallcom.2016.12.066)

R-01/13/13/000/0/00-00/PR-294/2018

### **Additive manufacturing of energetic materials**

M. CHIROLI, F. CISZEK, B. BASCHUNG

*Grant agreement DGA/ISL 2018 - No. 2018.60.003*

*29<sup>th</sup> Annual International Solid Freeform Fabrication Symposium - An Additive Manufacturing Conference, Austin/TX, US, August 7-9, 2018*

R-01/17/01/721/2/00-00/PR-307/2018

## Publications

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### **Nanothermite with meringue-like morphology: From loose powder to ultraporous objects**

C. MARTIN, M. COMET, F. SCHNELL, D. SPITZER

*JOVE, Journal of Visualized Experiments, November 2017, e56479, pp. 1-7*

© 2017 Journal of Visualized Experiments

[doi: 10.3791/56479](https://doi.org/10.3791/56479)

R-01/13/07/000/0/00-00/PU-43/2018

### **Mechanical behaviour modelling under dynamic conditions: Application to structural and high strength steels**

P. SIMON, Y. DEMARTY, A. RUSINEK

*DGA UM NAV 22016 90 0905*

*12<sup>th</sup> International DYMAT Conference, Palais des Congrès, Arcachon, FR, September 9-14, 2018*

R-01/13/13/681/9/00-00/PU-44/2018

### **Materialien zur Detektion von ultrafeinen Sprengstoffspuren zur zivilen und militärischen Sicherheit**

K. BONNOT, L. SCHLUR

*Wehrwissenschaftliche Forschung - Jahresbericht 2016, S. 46-47*

© BMVg, 2017

R-01/00/00/000/0/00-00/PU-115/2018

### **L'explosion : un phénomène à bien connaître**

M. COMET, C. MARTIN, F. SCHNELL, D. SPITZER

*Bulletin de l'Union des Physiciens (BUP)*, vol. 112, n°1002, mars 2018, pp. 443-457

© 2018 Union des Professeurs de Physique et de Chimie

R-01/13/07/000/0/00-00/PU-120/2018

### **Numerical simulations of reactive two-phase flows in interior ballistics**

R. WÖLBING, M. CHIROLI, C. STEINBACH, R. HRUSCHKA, B. BASCHUNG

BAAINBw E/T1AX/HA132/IF861

*Proceedings of the 3rd World Congress on Momentum, Heat and Mass Transfer (MHMT'18)*, Budapest, HU, April 12-14, 2018, Paper No. CSP 113

© International ASET Inc. 2018

doi: 10.11159/csp18.113

R-01/17/01/739/1/00-00/PU-149/2018

### **THz-TDS on polymers: Monitoring thermo-oxidative ageing and crystallization kinetics**

S. ENGELBRECHT, K.-H. TYBUSSEK, B. FISCHER, S. SOMMER

*43<sup>rd</sup> International Conference on Infrared, Millimeter and Terahertz Waves, IRMMWTHz 2018*, Nagoya, JP, September 9-14, 2018

© IEEE 2018

R-01/13/13/000/1/15-00/PU-248/2018

# ► Flight techniques for projectiles

## Peer reviewed publications

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### **Accuracy-simplicity trade-off for small-scale helicopter models: A comparative study based on flight data**

E. ROUSSEL, V. GASSMANN, E. LAROCHE\*

*Control Engineering Practice*, Vol. 73, April 2018, pp. 56–65

© 2018 Elsevier Ltd

[doi.org/10.1016/j.conengprac.2018.01.001](https://doi.org/10.1016/j.conengprac.2018.01.001)

R-02/14/04/000/0/00-00/PR-31/2018

### **Aerodynamic Coefficient Identification of a Space Vehicle from Multiple Free-Flight Tests**

M. ALBISSER, S. DOBRE, C. BERNER, M. THOMASSIN\*, H. GARNIER\*

*Journal Of Spacecrafts And Rockets*, Vol. 54, No. 2, March-April 2017

[doi: 10.2514/1.A33587](https://doi.org/10.2514/1.A33587)

R-02/13/01/000/0/00-00/PR-59/2018

### **Base pressure of spinning finned projectiles**

S. WEIDNER, R. HRUSCHKA, F. LEOPOLD

*BAAINBw E/E4BX/GA024/GF860*

*AIAA Journal*, Vol. 57, No. 1 (2019), pp. 472-475

[doi.org/10.2514/1.J056714](https://doi.org/10.2514/1.J056714)

R-02/13/16/562/1/00-00/PR-306/2018

## Publications

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### **Estimation of air velocity for a high velocity spinning projectile using transverse accelerometers**

A. FIOT, S. CHANGEY, C. COMBETTES, N. PETIT\*

*2018 AIAA Science and Technology Forum and Exposition, Kissimmee/FL, USA, January 8-12, 2018*

© AIAA 2018

R-02/14/03/000/0/00-00/PU/86/2018

### **Geschossintegrierte Kommunikation**

D. SCHMOLTZI, L. BERNARD

*wt, wehrtechnik VI/2017, G 4949, 49. Jahrgang, S. 88*

© Mönch Verlagsgesellschaft mbH

R-02/00/00/000/0/00-00/PU-113/2018

### **Antennes compactes en cavité pour applications GNSS**

L. GARCÍA-GÁMEZ\*, L. BERNARD, R. SAULEAU\*, S. COLLARDEY\*, K. MAHDJOUBI\*, P. POULIGUEN\*, P. POTIER\*

*Journées scientifiques 2018 d'URSI-France « Géolocalisation et navigation », Paris, FR, 28-29 mars 2018*

R-02/13/19/000/0/00-00/PU-132/2018

### **Metasurface-inspired antenna in cavity for GNSS applications**

L. GARCÍA-GÁMEZ\*, L. BERNARD, R. SAULEAU\*, S. COLLARDEY\*, K. MAHDJOUBI\*,  
P. POULIGUEN\*, P. POTIER\*

*12<sup>th</sup> European Conference on Antennas and Propagation, EUCAP, London, GB, April 9-13, 2018*  
© IEEE 2018

R-02/13/19/000/0/00-00/PU-150/2018

### **Software-defined radio system for tracking application**

C. CAMPO\*, L. BERNARD, H. BOEGLÉN\*, S. HENGY, J.-M. PAILLOT\*

*12<sup>th</sup> European Conference on Antennas and Propagation (EUCAP), London, GB, April 9-13, 2018*  
© IEEE 2018

R-02/13/19/000/0/00-00/PU-213/2018

### **GNU Radio development for DOA-based projectile tracking**

C. CAMPO\*, L. BERNARD, H. BOEGLÉN\*, S. HENGY, J.-M. PAILLOT\*

*French GNU Radio days 2018, Lyon, FR, July 2-3, 2018*

R-02/13/19/000/0/00-00/PU-214/2018

### **Attitude and velocity estimation of a projectile using low cost magnetometers and accelerometers**

C. COMBETTES, S. CHANGEY, R. ADAM, E. PECHEUR

*2018 IEEE/ION Position, Location and Navigation Symposium (PLANS), Monterey/CA, USA, 2018, pp. 650-657*  
© 2018 IEEE

doi: 10.1109/PLANS.2018.8373439

R-02/14/03/000/0/00-00/PU-228/2018

### **Spin rate estimation of projectiles from microwave signals**

H. COVIC, R. ADAM, C. THOMAS, F. SAADA, L. BERNARD, A. SCHNEIDER

*20<sup>th</sup> International Conference on Electromagnetics in Advanced Applications (ICEAA 2018), Cartagena de Indias, CO, 10-14 September 2018*  
© IEEE 2018

R-02/13/19/000/0/00-00/PU-266/2018

### **A supersonic projectile - embedded OFDM channel sounder. First validation experimental results**

M. MILLA, D. SCHMOLTZI, H. BOEGLÉN\*, L. BERNARD, R. VAUZELLE\*

*12<sup>th</sup> European Conference on Antennas and Propagation, EUCAP, London, GB, April 9-13, 2018*  
© IEEE 2018

R-02/13/19/000/0/00-00/PU-273/2018

### **Investigation of the flight behavior of a flare-stabilized projectile using 6DoF simulations coupled to CFD**

D. KLATT, M. PROFF, R. HRUSCHKA

*53<sup>rd</sup> 3AF International Conference on Applied Aerodynamics, Salon-de-Provence, FR, 26-28 March 2018*

R-02/17/01/000/0/00-00/PU-358/2018

# ▶ Laser and electromagnetic technologies

## Peer reviewed publications

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### **Mid-infrared ZGP OPO with divergence compensation and high beam quality**

M. SCHELLHORN, G. SPINDLER\*, M. EICHHORN

*OPTICS EXPRESS*, 1402, Vol. 26, No. 2, 22 Jan. 2018

© 2018 Optical Society of America

R-03/13/01/664/1/00-00/PR-72/2018

### **A Comparison of C-Shaped and Brush Armature Performance**

B. WILD, F. ALOUAHABI, D. SIMICIC, M. SCHNEIDER, R. HOFFMAN\*

*IEEE Transactions on Plasma Science*, Vol. 45, No. 7, July 2017

© 2015 IEEE

R-03/13/08/000/0/00-00/PR-84/2018

### **The influence of the rail material on the multishot performance of the rapid fire railgun**

B. WILD, C. SCHUPPLER, F. ALOUAHABI, M. SCHNEIDER, R. HOFFMAN\*

*IEEE Transactions on Plasma Science*, Vol. 43, No. 6, June 2015

© 2015 IEEE

R-03/13/08/050/9/00-00/PR-85/2018

### **Investigation of a fast high-repetitive 10-kV SiC-MOSFET switching module**

R. BISCHOFF, M. STOLL, R. HIMMELSBACH, S. SCHARNHOLZ

*Proceedings of the 2018 IEEE International Power Modulator and High Voltage Conference (IPMHVC), Jackson/WY, US, June 3-7, 2018*

© 2018 IEEE

R-03/13/09/000/0/00-00/PR-366/2018

## Publications

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### **Die elektronische Kanone - ein Waffensystem der Zukunft**

M. SCHNEIDER, O. LIEBFRIED

*Wehrwissenschaftliche Forschung - Jahresbericht 2016*, S. 44-45

© BMVg 2017

R-03/00/00/000/0/00-00/PU-114/2018

### **Elektromagnetische Kanone im scharfen Schuss**

COM, DIV III

*Europäische Sicherheit & Technik*, April 2018

© 2017, Mittler Report Verlag GmbH

R-03/00/00/000/0/00-00/PU-136/2018

### **Commutateurs haute tension à base de MOSFET SiC**

S. SCHARNHOLZ, R. BISCHOFF, K. CORREAL, M. STOLL

*Symposium de Génie Électrique (SGE 2018), Nancy, FR, 3-5 juillet 2018*

R-03/13/09/000/0/00-00/PU-236/2018

## **Towards SiC thyristors with amplifying gate design**

R. HASSDORF, S. SCHARNHOLZ, D. BAUERSFELD, B. VERGNE, L.V. PHUNG\*, D. PLANSON\*

*Agence Nationale de la Recherche - ANR-11-ASTR- 011- 01*

*Symposium de Génie Électrique (SGE 2018), Nancy, FR, 3-5 juillet 2018*

R-03/13/05/000/0/00-00/PU-329/2018

# ► Protection technologies, security, situational awareness

## Peer reviewed publications

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### **Influence of add-on perforated plates on the protective performance of light-weight armour systems**

T. FRAS, N. FADERL

BAAINBw E/T1AX/HA132/IF861 (RZV 2018)

11<sup>th</sup> International Armament Conference on Scientific Aspects of Armament and Safety Technology, Ryn, PL, September 19-22, 2016

doi: 10.5604/01.3001.0011.7177

R-04/16/02/751/1/00-00/PR-154/2018

### **An experimental study of the atmospheric-driven variability of impulse sounds**

S. CHEINET, M. COSNEFROY, F. KÖNIGSTEIN, W. RICKERT\*, M. CHRISTOPH, S.L. COLLIER\*, A. DAGALLIER, L. EHRHARDT, V.E. OSTASHEV\*, A. STEFANOVIC, T. WESSLING\*, D. KEITH WILSON\*

*Journal of the Acoustical Society of America*, 144 (2), August 2018, pp. 822-840

© 2018 Acoustical Society of America

R-04/18/02/000/0/00-00/PR-245/2018

### **Learning with a generative adversarial network from a positive unlabeled dataset for image classification**

F. CHIARONI\*, M.-C. RAHAL\*, N. HUEBER, F. DUFAUX\*

2018 25<sup>th</sup> IEEE International Conference on Image Processing (ICIP), Athens, GR, October 7-10, 2018, pp. 1368-1372

© 2018 IEEE

R-04/16/07/000/0/00-00/PR-282/2018

### **Classification d'images en apprenant sur des échantillons positifs et non labélisés avec un réseau antagoniste génératif**

F. CHIARONI\*, M.-C. RAHAL\*, F. DUFAUX\*, N. HUEBER

AFIA Association Française de l'Intelligence Artificielle, Actes de la Conférence Nationale d'Intelligence Artificielle 2018, Nancy, FR, 4-6 juillet 2018

R-04/16/07/000/0/00-00/PR-283/2018

### **Strong explosion near a convex structure: A multi-scale experimental study**

S. TRÉLAT\*, M.-O. STURTZER, S. EVEILLARD\*, D. ECKENFELS, J. MORY, J.-F. LEGENDRE, F. BRAINA\*, B. SOUBIÈS\*

25<sup>th</sup> Military Aspects of Blast and Shock, September 23-28, 2018, The Hague, NL

R-04/16/01/000/0/00-00/PR-288/2018

### **Laser protection with optical limiting by combination of polymers with dyes**

C.S. HEGE, O. MULLER, L. MERLAT

*Journal of Applied Polymer Science (J. APPL. POLYM. SCI.)* 2018

© 2018 Wiley Periodicals, Inc.

doi: 10.1002/APP.47150

R-04/16/06/000/0/00-00/PR-295/2018

## **Ti6Al4V-AA1050-AA2519 explosively-cladded plates under impact loading**

T. FRAS, I. SZACHOGLUCHOWICZ\*, L. SNIEZEK\*

*The European Physical Journal Special Topics*, September 2018, Volume 227, Issue 1–2, pp. 17–27

© EDP Sciences and Springer-Verlag GmbH Germany, part of Springer Nature 2018

doi.org/10.1140/epjst/e2018-00114-9

R-04/16/02/000/0/00-00/PR-344/2018

## **Benefits of using lode angle dependent fracture models to predict ballistic limits of armor steel**

C.C. ROTH\*, T. FRAS, N. FADERL, D. MOHR\*

*EPJ Web of Conferences*, Vol. 183, 01052, 2018, *DYMAT 2018 - 12<sup>th</sup> International Conference on the Mechanical and*

*Physical Behaviour of Materials under Dynamic Loading*, Arcachon, FR, 9-14 September 2018

doi.org/10.1051/epjconf/201818301052

R-04/16/02/000/0/00-00/PR-345/2018

## **Modelling the heating process of CFRP by cw-laser radiation with special focus on the heat transfer by thermal radiation between the carbon fibers**

R. SCHMITT, V. ALLHEILY

*10<sup>th</sup> CIRP Conference on Photonic Technologies [LANE 2018]*, ScienceDirect, *Procedia CIRP*, Vol. 74, pp. 562-567, 2018

doi.org/10.1016/j.procir.2018.08.086

R-04/15/01/000/0/00-00/PR-357/2018

## **Publications**

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## **Imagerie active à crénelage temporel multi-longueurs d'onde dans sa forme superposée**

A. MATWYSCHUK

*Congrès de la SFO-Société Française d'Optique*, Toulouse, FR, 03-06 juillet 2018

R-04/13/01/000/0/00-00/PU-208/2018

## **3D virtual audio with headphones: a literature review of the last ten years**

P. NOWAK, V. ZIMPFER, U. ZÖLZER\*

*DAGA 2018 - 44. Jahrestagung für Akustik*, München, DE, 19.-22. März 2018

ISBN 978-3-939296-13-3

R-04/13/15/000/0/00-00/PU-227/2018

## **Source localization and identification with a compact array of digital mems microphones**

A. RAMAMONJY, E. BAVU\*, A. GARCIA\*, S. HENGY

*ICSV25, 25<sup>th</sup> International Congress on Sound and Vibration*, Hiroshima, JP, July 8-12, 2018

© 2018 ICSV25

R-04/18/01/000/0/00-00/PU-232/2018

## **Integrating situational awareness into hearing protectors**

S. HENGY, V. ZIMPFER, P. HAMERY, M. CHRISTOPH, G. BLANCK, P. NAZ

*ICSV25, 25<sup>th</sup> International Congress on Sound and Vibration*, Hiroshima, JP, July 8-12, 2018

© 2018 ICSV25

R-04/18/01/000/0/00-00/PU-233/2018

## **Time resolved spectroscopic temperature measurement techniques during CW-laser matter interaction of Glass-Fiber-Reinforced-Polymers (GFRP)**

H. BORCHERT, V. ALLHEILY, L. MERLAT, J. KOKOT, R. SCHMITT

*XXXIV European Congress on Molecular Spectroscopy*, EUCMOS, Coimbra, PT, August 20-24, 2018

R-04/15/01/000/0/00-00/PU-240/2018

## **Localisation de sources impulsives en milieu urbain par capteurs distribués**

S. CHEINET, L. EHRHARDT

*Revue Acoustique & Technique*, Vol. 86-87, pp. 61-65

R-04/18/02/000/0/00-00/PU-246/2018

## **Ultra-broadband THz spectroscopy for sensing and identification for security applications**

K. KALTENECKER\*, B. ZHOU\*, K.-H. TYBUSSEK, S. ENGELBRECHT, R. LEHMANN\*,  
S. WALKER\*, P.U. JEPSEN\*, B.M. FISCHER

ANR-15-ASTR-0009-04

*43<sup>rd</sup> International Conference on Infrared, Millimeter and Terahertz Waves, IRMMWTHz 2018, Nagoya, JP,  
September 9-14, 2018*

© IEEE 2018

R-04/16/05/548/3/00-00/PU-254/2018

## **Toward the prediction of lung injury risk caused by Friedlander blast waves**

J. BOUTILLIER, C. DECK, S. DE MEZZO, P. MAGNAN, R. WILLINGER\*, P. NAZ

*25<sup>th</sup> Int. Symposium on Military Aspects of Blast and Shock (MABS), The Hague, NL, 23-28 September 2018*

R-04/17/01/000/0/00-00/PU-264/2018

## **Blast wave mitigation using multi-phase solid material in a sandwich cladding**

L. BLANC, M.-O. STURTZER, T. SCHUNCK, D. ECKENFELS, J.-F. LEGENDRE

*Military Aspects of Blast and Shock 25, The Hague, NL, September 23-28, 2018*

R-04/16/01/000/0/00-00/PU-271/2018

## **Blast mitigation by water mist: the effect of the detonation configuration**

T. SCHUNCK, M. BASTIDE, D. ECKENFELS, M.-O. STURTZER, J. MORY, J.-F. LEGENDRE

*MABS 25, Military Aspects of Blast and Shock, The Hague, NL, September 23-28, 2018*

R-04/16/04/000/0/00-00/PU-272/2018

## **Advanced active imaging with single photon avalanche diodes**

M. LAURENZIS, M. LA MANNA\*, M. BUTTAFAVA\*, A. TOSI\*, J.-H. NAM\*, M. GUPTA\*,  
A. VELTEN\*

University of Wisconsin + 693K125

*Proc. SPIE 10799, Emerging Imaging and Sensing Technologies for Security and Defence III; and Unmanned Sensors,  
Systems, and Countermeasures, 1079903 (4 October 2018), Event: SPIE Security + Defence, 2018, Berlin, DE*

© 2018 SPIE

doi: 10.1117/12.2500659

R-04/13/01/618/3/00-00/PU-278/2108

## **Evaluation of a logarithmic HDR sensor for an image-based navigation system**

M. TEKTONIDIS, M. PIETRZAK, D. MONNIN

*Proc. of SPIE Vol. 10643, SPIE Defense + Security, Orlando/FL, US, May 3, 2018*

© 2018 SPIE

doi: 10.1117/12.2304887

R-04/13/18/000/0/00-00/PU-293/2018

## **Investigations on projectile ricochet off body armor**

M. SEIDL

*PASS 2018, Personal Armour Systems Symposium, Washington D.C., US, October 1-5, 2018*

R-04/16/02/000/0/00-00/PU-303/2018

### **Perforation resistance of infrastructure materials**

M. SEIDL, A. KLAVZAR, A. BONGARTZ\*, S. GREULICH\*

*ICPS5 2018, 5th International Conference on Protective Structures, Poznan, PL, August 20-24, 2018*

© 2018 ICPS

R-04/16/02/730/1/00-00/PU-304/2018

### **High-speed visualization of shock mitigation using water drops or aqueous foam**

M. BASTIDE, T. SCHUNCK, C. BREDA, J.-L. STRIBY

*18th International Symposium on Flow Visualization ISFV18, Zürich, CH, June 26-29, 2018*

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R-04/16/04/000/0/00-00/PU-309/2018

### **Investigations on ricochet off complex targets – woven layered composite**

M. SEIDL, A. RAMEZANI\*, L. LINZ\*

*2018 Nordic LS-DYNA® Users Conference, Gothenburg, SE, October 18-19, 2018*

R-04/16/03/728/2/00-00/PU-320/2018

### **A study on initial conditions in smooth-particle-hydrodynamics modelling of high-velocity-impact**

M. BECKER, M. SEIDL, M. MEHL\*, M. SOULI\*, J.-F. LEGENDRE

*2018 Nordic LS-DYNA® Users Conference, Gothenburg, SE, October 18-19, 2018*

R-04/16/03/000/0/00-00/PU-322/2018

### **Numerical ricochet model of a 7.62 mm projectile penetrating an armor steel plate**

M. BECKER, M. SEIDL, J.-F. LEGENDRE, M. MEHL\*, M. SOULI\*

*15th International LS-DYNA® Users Conference, Detroit/MI, US, 10-12 June 2018*

R-04/16/03/000/0/00-00/PU-323/2018