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Technologies for Optical Countermeasures XI; and High-Power Lasers 2014: Technology and Systems

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Contents

Authors

Numbers in the index correspond to the last two digits of the six-digit citation identifier (CID) article numbering system used in Proceedings of SPIE. The first four digits reflect the volume number. Base 36 numbering is employed for the last two digits and indicates the order of articles within the volume. Numbers start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B...0Z, followed by 10-1Z, 20-2Z, etc.

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Lasers and Sources for Countermeasures
Hans-Dieter Tholl, Diehl BGT Defence GmbH & Co. KG (Germany)

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Part B: High-Power Lasers 2014: Technology and Systems

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Lasers and Laser Architectures for Power Scaling
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Novel Design in Fiber Lasers
Tino Eidaum, Friedrich-Schiller-Universität Jena (Germany)

DPAL and IR Gas Lasers
Salman Rosenwaks, Ben-Gurion University of the Negev (Israel)

Introduction to Part A: Technologies for Optical Countermeasures

This was the eleventh time that this conference has taken place and again offered a range of papers that were delivered over two days. There was also a panel discussion debating the topic of "Attaining Damage and Destroy Countermeasures." This discussion was very popular and caused some very interesting discussion, especially when the topic of countermeasures to imaging infrared seekers was raised.

This year's conference had eight sessions, which majored on laser technology, techniques as well as systems. There were two exceptional papers in the keynote session, which created a lot of interesting debate. In the following session there were invited presentations covering ITAR-Free (international trade in arms regulations) directed infrared countermeasure systems being developed, which, not surprisingly, created a very large audience and a lot of interesting questions.

There were three sessions discussing recent developments with laser technology, involving ultra-short pulse generation, combination of quantum cascade lasers and the use of fibre lasers in aircraft protection systems. There was a very valuable session discussing recent developments with laser technology for future DIRCM systems requiring energetic emissions in the mid-wave infrared.

The laser effects session was very interesting and again raised many interesting debates when the papers were opened for discussion. One concern was the continuing misinterpretation of "Protocol 4" of the Vienna Convention of 1995, which encouraged further debate.

The final session, which was indeed the final session of the symposium, was very well attended. The audience was well rewarded with three very interesting and stimulating talks.

We wish to thank all of the presenters for delivering an outstanding conference; moreover, we also thank the Programme Committee for their continued support and willingness to chair the various sessions, which is also appreciated by SPIE.

The chairmen encouraged the audience to consider topics for discussion at next year's conference and symposium, which will be held in Toulouse, France.

David H. Titterton
Mark A. Richardson
Robert J. Grasso

Panel Discussion: Technologies for Optical Countermeasures

In the "Technologies for Optical Countermeasures" Conference we continued the Panel Discussion Series begun last year. This year's topic was, "Attaining Damage and Destroy Countermeasures." Damaging or destroying the threat whilst in flight is seen as the "holy grail" to many in the Optical Countermeasures discipline. The discussion started with the statement that "no concept is a bad concept," which led to some initial statements that the cost of protection (CM System Level) vs. platform cost will be a major issue. This was followed by a comment that prime power draw from the platform may be a major issue as well. Another participant responded that CM system weight will be an issue with a 100KW system weighing about 4500 KG (10K Pounds). This was followed with statements about multiple threat engagement (prioritization) and "seeker only" damage vs. threat body damage, which can have significant impacts to CM system SWaP. Of course, overall CM system cost was discussed as a factor as well.

Several people mentioned False Alarm Rate as a potential issue, as well as a "pre-emptive" approach to damage the threat prior to launch. We had an insightful discussion on possible concepts, one being the concept of a "long laser" resurrecting an approach considered several years past, another creating a laser sustained plasma at the seeker, another using femtosecond lasers with their tremendous peak power, and yet another utilizing tunneling. All interesting approaches, indeed. Finally, the discussion moved to some of the practical aspects of system consideration: 1) laser size to perform the damage and destroy function, 2) acceptable damage parameters at the threat level, and 3) cost/benefit analysis to understand the true implications of implementing such a system. The Panel closed with the Chairs thanking all participants for the lively discussion and welcoming topics for next year's conference.