



Photonic Technologies for Beam Forming Payloads

ESA – ESTEC, Keplerlaan 1, Noordwijk The Netherlands

21st November 2008

ESA would like to invite you to attend a round table discussion on optical beam forming to be held at ESTEC on the 21st of November 2008.

Background

As some of you may be aware, over the last 5 years a number of activities have been concluded examining optical beam forming techniques for space applications. This effort has included several ESA funded activities and several external projects funded by National Agencies.

Thales Airborne Systems - Defence contract (Free space optical solution using LC spatial light modulators)

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Alcatel/Thales - ESA funded (Free space using LC spatial light modulators for telecom applications)

Das Photonics - ESA funded (Optical butler matrix based on a microphotonic IC)

SENER/University of Valencia/ Thales - ESA funded (Various technologies explored including free space, high speed tunable lasers, high speed LC arrays)

LioniX - NIVR funding (Microphotonic IC using ring resonators)

A diverse range of architectures and optical technologies have been explored in these activities advancing the state of the art in optical beam forming. At ESA it is considered a good time to stand back and assess where we are with regards to this technology, both in terms of maturity and the possible future applications.

The objective of the meeting are the following:

The objective of the meeting is to discuss the potentials of Photonic BFN technologies in light of current and future developments for Spaceborne Payloads by:

- Presenting the Agency's future requirements for advanced beamforming antennas and payloads.
- Explore current technology challenges posed by these advanced payloads.
- Review the state of the art in optical beam forming approaches.
- Discuss the merits of optical technologies in meeting these challenges
- Definition of a preliminary roadmap for optical technologies in advanced payloads (including beam forming)

Meeting Agenda

Einstein Meeting Room Aj033

BFN requirements for Future Payloads

- 09:00 Welcome and introduction – Iain McKenzie (ESA)
09:10 MOHA - The Optical Harness on-board SMOS – Manuel Martin-Neira (ESA)
09:35 Payloads: Needs and Technologies – Piero Angeletti (ESA)
10:00 Antenna: Needs and Technologies – Cyril Mangenot (ESA)
- 10:25 Coffee Break

Photonic BFN Session 1

- 10:35 Overview of Optical Beam Forming Activities at Selex SI – Luigi Pierno (Selex)
11:05 Overview of Optical Beam Forming Activities in Thales Photonics Lab –
Stephane Formont (Thales Aerospace Division)
11:45 OBEFONE project presentation:
Introduction - Juan-Manuel Del Cura Velayos (Sener)
Review of main results - Javier Marti (University Polytechnic Valencia) and
Stephane Formont (Thales Aerospace Division)
Conclusions - Juan-Manuel Del Cura Velayos (Sener)
- 12:45 Lunch

(Note: change of room after lunch)

Escape Dance Room (Ya building)

Photonic BFN Session 2

- 14:00 Microphotonic beam forming – Chris Roeloffzen (Lionix)
14:30 Advance nanophotonic structures implementing Butler Matrices for beamforming
applications in space – Francisco Cuesta (Das Photonics S.L.)
- 14:50 **Round Table Discussion**
“What is the future for Photonics for Spaceborne BFNs?”
- 16:00 End of meeting

Information for Visitors

When you arrive please report to the reception at the front gate and bring some form of identification containing a photograph (passport or drivers licence). At the gate you will receive a visitor badge. (Please note that this process may take some time, so I advise that you plan to arrive at the gate at least 20 minutes before the start of the meeting.)

Postal address:

European Space & Technology Centre
P.O. Box 299
2200 AG Noordwijk (The Netherlands)

Visiting address:

European Space & Technology Centre
Keplerlaan 1
2201 AZ Noordwijk (The Netherlands)

General telephone number:

Phone: +31 71 565 6565
Fax: +31 71 565 6040

GETTING TO ESTEC



ESTEC is located at the southern tip of Noordwijk.

From Den Haag (The Hague): take the A4 (direction Amsterdam) and exit at "Leiden". Follow the N206 towards Katwijk and Haarlem. Take the exit "Katwijk Noord". From there follow signs to "ESTEC" (small white squares).

From Amsterdam: take the A4 (direction Den Haag-Rotterdam) then at the junction follow the A44. Take the exit "Noordwijk-Voorhout", continue to Noordwijk and from there, follow signs to "ESTEC".

By train

From Leiden Centraal station, take the number 32 bus to Katwijk. The bus stops in front of the ESTEC entrance gate. Please note that this bus leaves twice an hour during peak periods and only once an hour during normal hours. Journey time is approx. 30 minutes.

By plane

From Schiphol airport, either take a taxi to ESTEC (30 min), or a train to Leiden (15 min) and then the number 32 bus (see train directions above) (30 min.). By rental car, follow the "By car" instructions as above from Amsterdam.

ON THE WEB

The following URLs containing useful information about Noordwijk may be helpful. Please note that ESA accepts no responsibility for the contents of these sites.

- *Noordwijk Information*

Information on Noordwijk, please consult the Tourist Office website:

www.vvvnoordwijk.nl

- *Travelling by train*

Please note that the nearest railway station to ESTEC is Leiden Centraal and the Amsterdam Airport railway station is called: Schiphol

www.ns.nl

- *Travelling by car*

This site provides a planner for your route to ESTEC from any place in Europe. Please use the following address details:

Address: Keplerlaan 1

Postal Code: 2201 AZ

City: Noordwijk ZH

Routeplanner: www.maps.google.com

- *Travelling by plane*

Information on Schiphol airport can be found at: www.schiphol.nl

Train connections from Schiphol Airport can also be found on this website.