Secondment Report Form

Secondee	Athanasios Polimeridis
Host Organization	Id:
	Name: Department of Radio Science and Engineering, Aalto University, Finland
Research Topic(s)	Computational electromagnetics
	Hyper singular integrals
	Surface integral equations

ACTIVITIES DURING THE SECONDMENT

<Brief description of the main activities developed during the stay, and how they contributed to achieve your work plan goals (max. 3 pages)>

- Presentation at the Research Seminar on Radio Science and Engineering, Wednesday 18/04
- Joint work on the evaluation of hyper singular ($1/R^3$-type) singularities in integral equation methods. In more details:

Many traditional surface integral equation formulations as well as some new cases related to novel boundary conditions would greatly benefit from additional flexibility in the discretization and numerical resolution process. Of course, this comes with a price as the arising reaction integrals become hyper singular, i.e. double normal derivatives of Green's functions, compared to the typical weakly singular and strongly singular integrals of the traditional schemes.

Currently, there are no methods in CEM able to tackle the above mentioned hyper singular integrals. My visit to Aalto allowed me to incorporate in my direct evaluation method very important features from the singularity subtraction method, originally introduced by researchers in Aalto. The hybrid scheme was tested during this visit with very rewarding and promising results. Moreover, we launched an extended campaign of numerical experiments, utilizing the full arsenal of the various integral equation formulations produced by Aalto scientists. Waiting for the final assessment, which we are planning to materialize in a publication to IEEE T-AP, other important aspects of the numerical evaluation of singular integrals are under scrutiny both by EPFL and Aalto.

MAIN RESULTS OF THE STAY

< List of the publications co-written (or in progress)>

Other(s):

Number of Publications: 1 (in progress)　　(1)_____
　　　　　　　　　　　　　　　　　　　　　　_____

Number of Documents/ Reports: _____　　(2)_____
　　　　　　　　　　　　　　　　　　　　　　_____

Number of Case Studies & Demonstrators: _____　　(3)_____
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FORECAST ACTIVITIES

<Are there any envisaged activities following this secondment project, new collaborations, co directed PhD, etc>

The newly started collaboration is expected to boost joint research on fundamental aspects of integral equation techniques as well as interesting real-life applications.

In order to improve CARE's secondment program, please fill this short questionnaire. Use the space at the end to expand your answers, if needed. Our aim is to improve the general experience for secondees in future.

Disagree ◄   ► Agree

GENERAL

	1	2	3	4
My objectives were achieved.	☐	☐	☐	x
The research topics were relevant to my work.	☐	☐	☐	x
I benefited from being part of a wider research culture.	☐	☐	☐	x

HOST ORGANIZATION

	1	2	3	4
I am satisfied with the quality and quantity of supervision I received.	☐	☐	☐	x
I had access to adequate resources to support my research..	☐	☐	☐	x

SECONDMENT PROGRAM

	1	2	3	4
I would recommend this secondment programme to others.	☐	☐	☐	x
I believe the skills I have learned will help me to improve my job/research.	☐	☐	☐	x
I would apply to another programme similar to CARE.	☐	☐	x	☐
In general, how would you classify the CARE Secondment Programme?	☐	☐	☐	x

Other questions/comments to be potentially considered: _____
_____
_____

SIGNATURES

Candidate Athanasios Polimeridis

Date: 2012/04/26
(year/month/day)

Signature