



The IEEE Electromagnetic Compatibility Society  
Singapore Presents:

# Principle of "Path of Least Inductance" and its Implications in Circuit, Cable and Grounding Design

**Elya B Joffe**

Senior Member of IEEE, member of the Board of Directors and VP for Conference and Symposia of the IEEE EMC Society (international), Past-Chairman of the Israel IEEE EMC Chapter, VP Engineering at K.T.M. Project Engineering, Registered Professional Engineer and a NARTE certified EMC and ESD Control Engineer. Listed in the Marquis "Who's Who in the World".

Location: LT 12A, Singapore Polytechnic, Block T 12A,  
500 Dover Road,  
Singapore 139651

Date: Tuesday, Jan 13th, 2004

Time: 6.30 - 7.40 p.m

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I need to know the the names, (if one is a IEEE or EMCS member) and the email contact.

**Format:** To make it easy for my database, just one line for each person the honorific (Mr./Ms./Dr./...), name, whether if one were a EMCS or just a IEEE member (blank if others ) enclosed in "double quotes", email contact in <square brackets> which each line ending with a comma and finally the affiliation (Company name and organization *if applicable*).

**Example:**

"Mr. John Doe"<John.Doe@example.org>,

"Ms. Kelly White, IEEE"<Kelly.White@example.org>,

"Dr. Wagner Tan, EMCS"<Wagner.Tan@example.org>,

Company Name

Summary:

Few principles in EMC are confusing as much as those of "Grounding" and "Shielding".

Indeed, misconceptions as to the mechanisms of those techniques have led to many wrong concepts and implementations, which today are extremely difficult to uproot: Is it better to use single point or multipoint grounding? In Which frequencies? Is it better to ground a shield at both ends or at one only? And how about the Signal circuits? How does return current flow on the PCB - does it follow the shortest path?

The key to the answer to all those questions lies within the domain of a concept called: "The Path of Least Inductance". That is the path that current will follow at high frequencies (what is "high" for this purpose?)

This lecture will discuss the very important concept of the "Path of Least Inductance", and the application of this principle for providing answers to the above questions and others.

The presentation will be primarily practical, with mathematical derivation kept to the absolute minimum, while applications and practical examples will be elaborated and discussed extensively.

The lecture notes is 4.4 MB, it can be downloaded, please follow links from: <http://www.geocities.com/timfoo6143/>

## Chapter meeting of the EMC Society, Singapore

The Singapore Chapter of the IEEE EMC Society is presenting our first meeting of 2004 with a member of the Board of Directors of the IEEE EMC Society, a Senior Members of the IEEE, and one time distinguished lecturer to help kick off 2004 for the Singapore EMC Chapter.

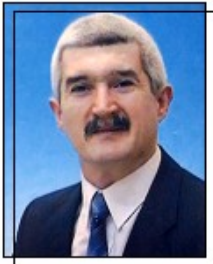
The event will consist of a short evening based on EMC material - a must attend event for every engineer faced with the issues relating to Electromagnetic Compatibility and PCB Layout and Cable Design. The evening will consist of a presentation on the facts relating to EMC, PCB layout and Cable design affecting EMC.

The purpose of this event is to offer some design fundamentals to individuals interested in the field of EMC who would not normally attend one of the regional or international EMC symposiums. It is a great time to meet others who is working in this field in Singapore.

The admission is free and the seminar notes can be downloaded for your perusal.

Members and Non-Members of the IEEE EMC Society are invited to all chapter activities, and meetings.

### About the speaker:



**Elia Bernard Joffe** works for K.T.M. Project Engineering, an engineering consulting company in Israel since 1987. He currently holds the position of Vice-President of Engineering and works as a Senior EMC engineering Specialist and consultant. Prior to that, between 1981 to 1987, he was with the Engineering Division of the Israel Air Force (IAF), responsible for EMC and System Engineering for airborne systems. His responsibilities included the EMC design of modern and upgraded military aircraft.

Mr Joffe has over 20 years of experience in government and industry, in EMC/E<sup>3</sup> (Electromagnetic Compatibility/ Electromagnetic Environmental Effect) for electronic systems and platforms (in particular – aircraft and aerospace). His work covers various fields in the discipline of EMC, EMP and Lighting Protection Design, as well as numerical modeling for solution of EMC problems.

He is well known in Israel and abroad for his activities in EMC training and education, and has developed and presents many courses on Electromagnetic Compatibility and related topics. Mr Joffe has authored and co-authored over 30 papers in EMC and EMC related topics in both the IEEE Transactions on EMC and Broadcasting, the IEEE EMC Society as well as the Zurich Symposia. He is also an associate editor of the IEEE EMC Society's Transactions on Electromagnetic Compatibility, as well as in the proceedings of International EMC Symposia.

Mr. Joffe is Senior Member of IEEE, a member of the Board of Directors of the IEEE EMC Society (EMCS) and the newly elected EMCS VP of Conferences and Symposia and Chairs several Committees and working groups within the Society in various fields. He is also the Immediate Past Chairman of the Israel IEEE EMC Chapter. Mr. Joffe served as a "Distinguished Lecturer" of the IEEE EMC Society, for the years 1999 through 2000.

He is a Registered Professional Engineer and a NARTE Certified EMC and ESD Control Engineer. Mr Joffe is also a member of a prestigious fraternity of EMC Engineers – "The dB Society".

He has received several certificates and recognitions from the IEEE and EMC Society for his activities. In particular, he is a recipient of the prestigious **Lawrence G. Cumming Award** of the IEEE EMC Society (2002) "For outstanding service and leadership as the Israeli IEEE EMC Chapter Chairman, contribution to the EMC standardization of commercial products in Israel, promotion of the 2003 IEEE International Symposium on EMC as Chairman, and contribution to the overall success of the IEEE EMC Society" and the IEEE "**Third Millennium Medal**" in recognition and appreciation of valued services and outstanding contributions". Mr. Joffe is also listed in the Marquis "Who is Who In The World".

<http://www.ieee.org/organizations/pubs/newsletters/emcs/summer00/person.htm>