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*Major Research Interest:* **Complex Analysis in Several Variables**  
*Other Interests:* **Mathematical Foundations of Information Technology**

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Our works concentrate on a theory of representing systems and Dirichlet series in several complex variables as well as applications to functional equations.

As is well-known, in complex analysis there are many problems related to the representation of functions in terms of simpler functions, like exponential functions or rational functions. This applies of course also to real analysis. The questions can be asked for arbitrary holomorphic functions defined in an open set in the space of several complex variables, but also, and perhaps more importantly, for functions that solve a particular equation or system of equations. And the equations, in turn, can be differential equations or convolution equations.

Typically most of the phenomena discussed are well understood in one variable, whereas for several variables there are some known results, but there is much more to be done. Also the domains of the functions are usually supposed to be convex, whereas much less is known in lineally convex sets.

During the last three decades there has been developed extensively a concept of representing systems of exponents and applications in multidimensional spaces. The starting point of this study is to show that every entire function as well as every holomorphic function in a convex domain can be represented in the form of Dirichlet series.

There are several problems that arise from this representation, like the description of analytic functionals (dual spaces) not only on convex domains (via the Laplace and the Fantappiè transformations), but also on lineally convex domains (via the Fantappiè transformation), the existence of discrete weakly sufficient sets in the dual spaces (introduced and considered by Ehrenpreis, Taylor and Schneider among others), ... Also in connection with the representation said above, it is important to study systematically Dirichlet series with complex frequencies in several variables: basic properties and then other related problems as well as applications.

#### Selected Publications

**Le Hai Khoi**, Espaces conjugués, ensembles faiblement suffisants discrets et systèmes de représentation exponentielle. *Bull. Sci. Math.* (2) **113**, 309 - 347 (1989)

**Le Hai Khoi**, Holomorphic Dirichlet series in several variables. *Math. Scand.* **77** 85 - 107 (1995)

**Le Hai Khoi**, Analytic functionals on weakly lineally convex domains and representation of functions by rational fractions. *Complex Variables* **28** 299 - 312 (1996)

**Le Hai Khoi**, Hilbert spaces of holomorphic Dirichlet series and applications to convolution equations. *J. Math. Anal. Appl.* **206** 10 - 24 (1997)

Morimoto Mitsuo, **Le Hai Khoi**, Representation of harmonic functions in the Lie ball by Dirichlet series. *Tokyo J. Math.* **20** 331 - 342 (1997)

**Le Hai Khoi**, P. Thomas, Weakly sufficient sets for  $A^{-\infty}(D)$ . *Publ. Mat.* **42** 435 - 448 (1998)

**Le Hai Khoi**, Density theorems for exponential systems in the Bargmann-Fock space of entire functions. In: *Selected Problems of Math. Analysis*. Ed: A.V. Abanin, Gingo Publisher, Russia 86 - 93 (2000)

**Le Hai Khoi**, Density theorems for exponential systems in the Bergman space of holomorphic functions. In: *Proc. of the Second ISAAC Congress*, Kluwer Academic Publisher 789 - 797 (2000)

**Le Hai Khoi**, On the linear hull of exponentials in  $C^n$  and applications to convolution equations. In: *Microlocal Analysis and Complex Fourier Analysis*. Eds: T. Kawai, K. Fujita, World Scientific Publisher 135 - 148 (2002)

**Le Hai Khoi**, Dang X.H., Nguyen L.D., Some problems about Archimedean triangular norms, *Vietnam Journal of Computer Science & Cybernetics* **20** 373 - 384 (2004)

Choi Y.-J., **Le Hai Khoi**, Kim K.-T., On an explicit construction of weakly sufficient sets for the function algebra  $A^{-\infty}(\Omega)$ , *Complex Variables and Elliptic Equations* **54** 879 - 897 (2009)

Abanin A.V., **Le Hai Khoi**, On the duality between  $A^{-\infty}(D)$  and  $A^{-\infty}_D$  for convex domains, *C.R. Acad. Sci. Paris, Ser. I* **347** 863 - 866 (2009)

#### Collaborators

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