

Lautsch Finite Elemente GmbH

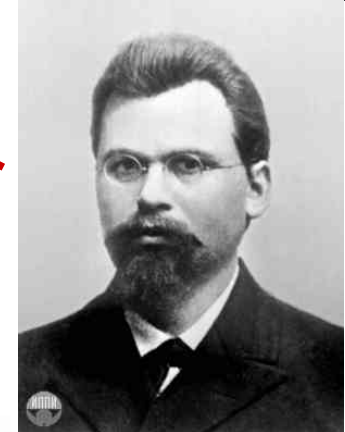
Russian Mathematics

	projection = best approximation			heat	linear static
	point to line	point to plane	of a function		
What	point	point	function	PDE	PDE
source vs	3D space	3D space	function space	differentiable functions	vector of 3 functions
# dimensions of source vs	3	3	inf	inf	inf
target vs	line	plane	FE space	FE space	
dimensions of target vs = # equations of the linear system	1	2	# nodes	# nodes	# nodes * 3
inner product = $\langle A, B \rangle$	Euclidean: $A_1^* B_1 + A_2^* B_2 + A_3^* B_3$		$\int A * B$	$\int \text{grad } A * \text{grad } B$	$\int D * A * D$
distance	$\ A - B\ = \text{sqrt}(\langle A - B, A - B \rangle)$				
linear system	$\langle a_1 A_1 + \dots + a_n A_n, A_j \rangle = \langle \cdot, A_j \rangle$			Ritz-Galerkin	
vs = vector space					3

Boris Delaunay
1890 - 1980



Georgy Voronoyi
1868 - 1908



Sergei Sobolev
1908 - 1989



Boris Galerkin
1871 - 1945



Aleksey Krylov
1863 - 1945



Lautsch Finite Elemente



How to transfer points to a mesh of triangles or tetras is the subject of Delaunay's 1934 presented method.



How to transfer points to a poly-mesh is named Voronoi's method. The Methods are dual to each other.



Boris Galerkin's method describes, how a differential equation is transformed to a discrete problem of some finite sets of basis functions. As a mathematician and engineer he was a general in the soviet army (1939 – 1945).



Aleksy Krylov was a famous shipbuilder and mathematician. Today's most efficient methods for solving large systems of linear equations are named after him.



Sergey Sobolev's embedding theorem describes how the vector spaces of differentiable functions are ordered. He participated in the A-bomb project of the USSR.

Pictures were taken from Wikipedia, where you can read more.