

## On derivative sampling using Kantorovich-type sampling operators

Gert Tamberg

*Tallinn University of Technology*

gert.tamberg@taltech.ee

Olga Graf

*Technical University of Munich*

olga.graf@ma.tum.de

For  $f \in C(\mathbb{R})$  the generalized sampling operators are given by ( $t \in \mathbb{R}$ ;  $W > 0$ )

$$(S_W f)(t) := \sum_{k=-\infty}^{\infty} f\left(\frac{k}{W}\right) s(Wt - k), \quad (1)$$

where  $s$  is a certain kernel function, i.e.

$$s \in L^1(\mathbb{R}), \quad \sum_{k \in \mathbb{Z}} s(u - k) = 1, \quad (u \in \mathbb{R}).$$

We show a connection between generalized sampling operators with averaged kernels and generalized Kantorovich-type sampling operators. Using this connection, we can estimate the order of approximation of derivatives.