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Important dates. The deadline to submit a short talk or poster is **May 21st, 2025**. Notification of acceptance will be sent by **June 2nd, 2025**, and the registration deadline is **June 15th, 2025**.

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Some theorem-like environments are available. Here are some instances.

DEFINITION 1 *Let* $1 \le p \le +\infty$ *and* $\Omega \subset \mathbb{R}^N$ *an open set. The first order Sobolev space, denoted by* $W^{1,p}(\Omega)$*, is defined by*

$$(1) \qquad W^{1,p}(\Omega) = \{v \in L^p(\Omega) \, / \, \nabla v \in L^p(\Omega)^N\}.$$

For $1 \le p < +\infty$ and $v \in W^{1,p}(\Omega)$ we put

$$(2) \qquad \|v\|_{1,p} = \left(\int_\Omega |v|^p + \int_\Omega |\nabla v|^p\right)^{1/p},$$

and also

$$(3) \qquad \|v\|_{1,\infty} = \|v\|_\infty + \|\nabla v\|_\infty,$$

The following results are well known.

THEOREM 2 *Let* $1 \le p \le +\infty$*. Then* $\|\cdot\|_{1,p}$ *is a complete norm in* $W^{1,p}(\Omega)$*.*

THEOREM 3 *Let* $1 \le p < +\infty$*. Then* $W^{1,p}(\Omega)$ *is separable.*

THEOREM 4 *Let* $1 < p < +\infty$*. Then* $W^{1,p}(\Omega)$ *is reflexive.*

REMARK 5 *The case* $p = 2$ *is a very special case. The next result tells us that* $W^{1,2}(\Omega)$ *is more than a Banach space.*

COROLLARY 6 $W^{1,2}(\Omega)$ *is a Hilbert space.*

From now on, we will write $H^1(\Omega)$ instead of $W^{1,2}(\Omega)$.

Acknowledgements

References

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