(4.6) Strong solutions

Theorem 1 $n=2$ $u_0 \in V$, $f \in L^2_{loc}(0,\infty;H)$

then $\frac{du}{dt} + \nu Au + B(u,u) = f$ is a equality in $L^2(0,T;H)$

and $u \in L^\infty(0,T;V) \cap L^2(0,T;\mathcal{D}(A))$ unique.

Moreover $u \in C^0([0,T];V)$ and $u_0 \mapsto u(t)$ is continuous.

Proof: [R. p. 252 ff]

If f does not depend on time, then

Semidynamical System $(V, \{S_V(t)\}_{t\geq 0})$.

Theorem 2 $n=3$: Strong solutions are unique.