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*Well-posedness for degenerate Schrödinger equations*

**Abstract**

We are interested in the initial value problem for Schrödinger type equations

$$\frac{1}{i}\partial_t u - a(t)\Delta_x u + \sum_{j=1}^n b_j(t, x)\partial_{x_j} u = 0$$

with  $a(t)$  vanishing of finite order at  $t = 0$  proving the well-posedness in Sobolev and Gevrey spaces according to the behavior of the real parts  $\Re b_j(t, x)$  as  $t \rightarrow 0$  and  $|x| \rightarrow \infty$ . To get the results we determine a suitable weight function depending on different zones of the extended phase space, we form after a change of variables the conjugation by pseudo-differential operators of infinite order and apply sharp Gårding inequality to prove  $L^2$  well-posedness of an auxiliary Cauchy problem.

Moreover, we discuss the application of our approach to the case of a general degeneracy.

BIBLIOGRAPHY

- [1] M. Cicognani, M. Reissig: *Well-posedness for degenerate Schrödinger equations*, 19pp., submitted.