

UNIVERSIDADE FEDERAL DE SÃO CARLOS  
DEPARTAMENTO DE MATEMÁTICA

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Falará sobre

A semilinear Schrödinger equation with symmetric  
magnetic potential

We consider the magnetic Schrödinger equation

$$-(\nabla + iA(x))^2 u = |u|^{p-2} u, \quad 2 < p \leq 2^* := 2N/(N-2) \quad (N \geq 3)$$

where  $A : \mathbb{R}^N \rightarrow \mathbb{R}^N$ . The operator  $\nabla + iA(x)$  appears in quantum mechanics of particles in an external magnetic field whose source is the magnetic potential  $A$ . We mainly focus our attention on the case  $p = 2^*$  which is the critical exponent for the embedding of the Sobolev space  $H^1(\mathbb{R}^N)$  into  $L^p(\mathbb{R}^N)$ . We discuss the existence of nontrivial solutions ( $u \neq 0$ ) under the assumption that  $A$  is equivariant with respect to an action of a closed group  $G \subset O(N)$  and we point out some connections to the equation

$$-\Delta u = |u|^{2^*-2} u, \quad x \in \mathbb{R}^N$$

related to the Yamabe problem. We also show that if  $G$  is “too large” ( $G = SO(N)$ ), then the magnetic Schrödinger equation is equivalent to the non-magnetic one (the magnetic potential can be gauged away).

Quarta-feira, 30 de agosto, às 17 h no Auditório