

**Seidel, P.**

[π<sub>1</sub> of symplectic automorphism groups and invertibles in quantum homology rings.](#) (English)

[Zbl 0928.53042](#)

[Geom. Funct. Anal.](#) 7, No. 6, 1046-1095 (1997).

Let  $(M, \omega)$  be a closed connected symplectic manifold. Further, let  $\text{Ham}(M, \omega)$  denote the group of Hamiltonian automorphisms of  $(M, \omega)$  equipped with the  $C^\infty$ -topology. Defining a homomorphism from a certain extension of the fundamental group  $\pi_1(\text{Ham}(M, \omega))$  to the group of invertibles in the quantum homology ring of  $(M, \omega)$ , the author studies relations between the topology of the automorphism group of  $(M, \omega)$  and the quantum product on its homology. Methods used to define this homomorphism are Hamiltonian fibre bundles, Floer homology, compatible almost complex structures, pseudoholomorphic curves as well as a gluing argument. Since the author allows time-dependent almost complex structures, the manifold has to satisfy a technical condition that replaces weak monotonicity. Finally, some examples and applications are given. For instance, a known result of D. McDuff for the Hamiltonian automorphism group of  $S^2 \times S^2$  is recovered.

Reviewer: [Katharina Habermann \(Leipzig\)](#)

**MSC:**

[53D40](#) Symplectic aspects of Floer homology and cohomology

[32Q60](#) Almost complex manifolds

[32Q65](#) Pseudoholomorphic curves

Cited in **10** Reviews  
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**Keywords:**

[fundamental group of the group of Hamiltonian automorphisms](#); [Hamiltonian fiber bundles](#); [Floer homology](#); [quantum homology](#)

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