

Gemeinsame Veranstaltung von  
**Humboldt-Universität zu Berlin, Institut für Physik**  
(Theorie der Elementarteilchen / Computerorientierte Theoretische Physik)  
**DESY, Zeuthen**

**SEMINAR**  
**Feldtheorie auf dem Gitter und**  
**Phänomenologie der Elementarteilchen**

Am Montag, dem **26. Oktober 2009**, um **16:00 Uhr s.t.** spricht

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zum Thema

**Logarithmic corrections to  $O(a^2)$  lattice  
artifacts**

**Abstract**

I will discuss logarithmic corrections to the  $O(a^2)$  lattice artifacts for a class of lattice actions for the non-linear  $O(n)$  sigma-model in two dimensions, in the framework of Symanzik's effective theory. Using renormalization group equations with perturbative coefficients it turns out that generic leading artifacts are of the form  $a^2[\ln(a^2)]^{(n/(n-2))}$ . For the case  $n = 3$  this behavior (together with the next-to-leading corrections) describe satisfactorily the lattice artifacts in the step scaling function, which are for the standard action surprisingly apparently of the form  $O(a)$  in a large range of the cutoff.

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