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Wilsonian RG for 3D Wess-Zumino–Witten theory with Stiefel-manifold target space

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A Stiefel manifold for N, p integers with $N > p$ is the quotient
$operatornameSO(N)/$
$operatornameSO(p)$. In $d = p - 1$ spacetime dimensions (set henceforth $d = 3$), it admits a non-trivial Wess-Zumino–Witten theory. Here, I shall present efforts to study which of these theories admit real fixed points of the renormalisation group flow. I shall work in a Wilsonian implementation, using a weak-coupling expansion for general N and a self-consistent scheme for $N = 5$ (the latter based on work with Hawashin-Eichhorn-Janssen-Scherer). It is well known that these theories describe (quasi-)universal properties of exotic phase transitions and phases beyond the Ginzburg–Landau paradigm, with explicit microscopic realisations known at least for $N = 5, 6$. For $N > 6$, no known (super-)renormalisable dual Lagrangian is known, rendering them of great intrinsic theoretical interest as well.

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