Refereed papers.

(1) S. Friedl, *Eta invariants as sliceness obstructions and their relation to Casson-Gordon invariants*, Algebraic & Geometric Topology, Vol. 4: 893–934 (2004).

Abstract: *We show that certain eta invariants associated to metabelian representations* $\pi_1(M_K) \to U(k)$ *vanish for slice knots. We show that our vanishing results contain the Casson-Gordon sliceness obstruction. We study the relation between the eta invariant sliceness obstruction and the* L^2*-eta invariant sliceness obstruction recently introduced by Cochran, Orr and Teichner.*

(2) S. Friedl and P. Teichner, *New topologically slice knots*, Geometry and Topology, Volume 9 (2005) Paper no. 48, pages 2129–2158.

Abstract: *In the early 1980's Mike Freedman showed that all knots with trivial Alexander polynomial are topologically slice (with fundamental group* $\mathbb{Z}$*). This paper contains the first new examples of topologically slice knots. In fact, we give a sufficient* homological *condition under which a knot is slice with fundamental group* $\mathbb{Z} \times_\gamma \mathbb{Z}[1/2]$.

(3) S. Friedl, *Full signature invariants for* $L_0(F(t))$, Proc. Amer. Math. Soc. 133: 647-653 (2005).

Abstract: *Let* $F/\mathbb{Q}$ *be a number field closed under complex conjugation. We find full invariants for detecting non–zero elements in the L–group* $L_0(F(t)) \otimes \mathbb{Q}$*. This group plays an important role in the work of Casson and Gordon.*

(4) S. Friedl, L^2*-eta-invariants and their approximation by unitary eta-invariants*, Math. Proc. Camb. Phil. Soc., Vol. 138: 327-338 (2005).

Abstract: *Using an approximation theorem by Lück and Schick we show that if for a knot K the metabelian eta–invariant ribbonness obstruction of the author vanishes, then the metabelian* L^2*–eta–invariant sliceness obstruction of Cochran, Orr and Teichner vanishes as well.*

(5) S. Friedl, *Link concordance, boundary link concordance and eta invariants*, Math. Proc. Camb. Phil. Soc., Vol. 138: 437-460 (2005).

Abstract: *We study eta-invariants of links and show that in many cases they form link concordance invariants. This result contains and generalizes previous invariants by Smolinsky and Cha–Ko. We furthermore give a formula for the eta-invariant for boundary links.*

(6) S. Friedl, *Algorithm for finding boundary link Seifert matrices*, GT/0305405, 11 pages. To be published by the Journal of Knot Theory and its Ramifications.

> Abstract: *We explain an algorithm for finding a boundary link Seifert matrix for a given Alexander polynomial. The algorithm depends on several choices and therefore makes it possible to find non-equivalent Seifert matrices for a given Alexander polynomial.*

Submitted papers.

(1) S. Friedl and T. Kim, *Thurston norm, fibered manifolds and twisted Alexander polynomials*, GT/0505594, 33 pages.

> Abstract: *We show that the degrees of twisted Alexander polynomials give lower bounds on the Thurston norm, generalizing work of McMullen and Turaev. Using these lower bounds we confirm the genus of all knots with 12 crossings or less, including the Conway knot and the Kinoshita–Terasaka knot which have trivial Alexander polynomial. We also give obstructions to fibering 3–manifolds using twisted Alexander polynomials and detect all knots with 12 crossings or less that are not fibered. Our work extends the fibering obstructions of Cha to the case of closed manifolds.*

(2) S. Friedl and T. Kim, *Twisted Alexander norms give lower bounds on the Thurston norm*, GT/0505682, 25 pages.

> Abstract: *We introduce twisted Alexander norms of a compact connected orientable 3-manifold generalizing norms of McMullen and Turaev. We show that twisted Alexander norms give lower bounds on the Thurston norm of a 3-manifold. Using these we completely determine the Thurston norm of many 3-manifolds which can not be determined by previous methods.*

(3) S. Friedl, *Reidemeister torsion, the Thurston norm and Harvey's invariants*, GT/0505594, 20 pages.

> Abstract: *Representations over non–commutative rings were used by Cochran, Harvey, and Turaev to define Alexander polynomials whose degrees give lower bounds on the Thurston norm. We show how Reidemeister torsion relates to these invariants. We give lower bounds on the Thurston norm in terms of the Reidemeister torsion which gives an elegant reformulation of the bounds of Cochran, Harvey and Turaev. Our approach also gives a natural way to proving and extending certain monotonicity results of Cochran and Harvey.*

(4) S. Friedl and T. Kim, *The parity of the Cochran–Harvey invariants of 3–manifolds*, GT/0510475, 13 pages.

Abstract: *Given a finitely presented group G and a homomorphism* $\phi : G \to \mathbb{Z}$ *Cochran and Harvey defined a sequence of invariants* $\overline{\delta}_n(G,\phi), n \in \mathbb{N}$, *which can be viewed as the degrees of higher order Alexander polynomials. If G is a 3–manifold group then this sequence is known to be never decreasing. We improve this by showing that in fact any jump in the sequence is necessarily even. This answers in particular a question of Cochran. Furthermore we show that the parity of the Cochran–Harvey invariant agrees with the parity of the Thurston norm.*

Papers in preparation.

(1) S. Friedl and S. Harvey, *Non–commutative multivariable Reidemeister torsion and the Thurston norm.*

Abstract: *We show that a norm can be associated to a matrix defined over a non–commutative multivariable Laurent polynomial ring. This allows us to define an analogue of the Alexander norm for 3–manifolds using non–commutative Reidemeister torsion. Furthermore we show that Harvey's invariants are in fact a norm.*

(2) S. Friedl and S. Vidussi, *Twisted Alexander polynomials and symplectic structures.*

Abstract: *Let N be a closed 3–manifold. S. Friedl and T. Kim showed that if N is fibered then certain twisted Alexander polynomials of N are monic. In this paper we show that the same holds if* $S^1 \times N$ *is symplectic. This result gives strong evidence for Taubes' conjecture. As an application of these results we will show that* $S^1 \times N(P)$ *does not admit a symplectic structure, where* $N(P)$ *is the* 0*–surgery along the pretzel knot* $P = (5, -3, 5)$, *answering a question of P.Kronheimer.*