



Folder. Projects/CnS (for "Cars and Seifert")

Title. Car Traffic on Knots and the Seifert Pairing.

Abstract. Recent fast, strong, meaningful and fun knot invariants ( $\rho_k$ ,  $\theta$ , and maybe more) are computed from a certain "relatively invariant" function of two points on a knot diagram, the so-called "traffic function". In this article we prove a relationship between the traffic function and the inverse of the Seifert pairing form, which in itself is related to equivariant linking numbers. This relation bounds the polynomial degree of the traffic function in terms of the knot genus, and this translates to a bound on the degrees of  $\rho_k$  and  $\theta$  in terms of the knot genus, proving conjectures of [Ov?] and of [Theta].

Implement before writing commences:

1. Knot diagrams to Seifert diagrams, presented as knotted unoriented cores.
2. Seifert diagrams back to knot diagrams.
3. Draw both kinds of objects.
4. Find a maximal tree in a Seifert diagram.
5. Compute the  $n_{\{\alpha\beta\}}$  matrix.
6. Compute  $g_{\{\alpha\beta\}}$  from  $n_{\{\alpha\beta\}}$  and compare with the existing computation.

