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**Uwe Kaiser\*** ([ukaiser@boisestate.edu](mailto:ukaiser@boisestate.edu)), Department of Mathematics, Boise State University, 1910 University Drive, Boise, ID 83725-1555. *Alexander type invariants of fusions of links*. Preliminary report.

In 1991 we proved in unpublished work that there exist exact sequences relating Alexander modules of strong fusions of links (add a trivial circle linking the fusion band) with the modules of the original link and certain Alexander modules of a string link defined from the band. From this we concluded a quite practical explicit formula (in terms of the Alexander polynomials of the two knots and the band) for a band sum of two knots, suggesting a ribbon concordance to the connected sum. This ribbon concordance was proved by K. Miyazaki in 1998. The band information in our formula is deduced from a so called *longitudinal polynomial* (discussed by Hillman and Levine in 1981) of the two-component strong fusion. The more recent progress due to knot, link and string link homologies suggests to revisit some of the old results, which will be the main focus of the talk. But there are obvious questions we want to touch on like: (i) the quasi-alternating property of fusions, (ii) the categorification of longitudinal polynomials, and (iii) the calculation of knot homology of strong fusions of links and of band sums of knots. (Received January 28, 2014)