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Book of Interest

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Review

Einführung in die Theorie des Verkehrsflusses, Wilhelm Leutzbach, Springer-Verlag, Berlin, 1972, 155 pages, $6.10 (U.S.)

Professor Leutzbach's "Introduction to the Theory of Traffic Flow" is the latest addition to a small group of books devoted exclusively to that topic (Haight, 1963, Gerlough & Capelle, 1964, Ashton, 1966, Prigogine and Herman, 1971, etc.) The book differs from its predecessors by being a textbook for students of engineering rather than a compendium on the state of the art of the last addition to it. Consequently, this review will focus on the didactic aspects of content relevance and quality of exposition.

In its scope the book is limited to the discussion of traffic flow between junctions excluding thereby traffic phenomena associated with crossing and merging streams of vehicles. In Part I, comprising approximately thirty pages, the motion of a single vehicle is described in deterministic and stochastic terms. Part II, extending over the remaining hundred and twenty pages, is devoted to the description of the flow of a stream of vehicles on a road. Discussion here proceeds from a systematic definition of flow, density, headway, and speed distributions through the analysis of their theoretical and empirically observed relations, to car-following theories and continuum models of vehicular traffic.

Textbooks written for students of engineering usually contain a component of 'applied' information incorporated partly in the text and partly in examples and problems for solution. The impression is that the "engineering practice" component has been almost deliberately de-emphasized in Professor Leutzbach's book that some teachers and students may find to be an undesirable attribute of an otherwise well structured textbook. The text is richly spiced with examples that are helpful in explaining the mathematically derived results but not very inspiring in their motivation. Particularly lamentable is the complete absence of problems for solution. Admittedly, the segment of the theory of traffic flow covered in this textbook does not abound with engineering applications—at least at the elementary level—rendering provision of an 'applied' flavor difficult.

In spite of the rather fine division into sections and subsections, the narration is fluent and the argumentation clear. Exposition is not always uniform in the level of detail provided. The exhaustive, meticulous care with which the definitional

sections are written is not always matched with the treatment afforded to the car following and continuum models.

The notation is consistent and precise. A list of symbols would help the reader with less than perfect memory. The text is richly and clearly illustrated and remarkably free of typographical errors.

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