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Phone: (860) 347-6933

Fax: (860) 704-0465

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## European Mathematical Society

*The following review will appear in the March 2015 issue of CHOICE. The review is for your internal use only until our publication date of 01 March 2015*

### Mathematics

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**52-3709** QA554 MARC

Casas-Alvero, Eduardo. **Analytic projective geometry**. European Mathematical Society, 2014. 620p bibl index afp ISBN 9783037191385, \$78.00.

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Projective geometry has always been an important branch of geometry, although it has gone in and out of fashion throughout its history of almost 300 years. The introduction of coordinates opened analyses that have been exploited in computer vision and graphics in recent years. Felix Klein spread the word in the Erlangen program that projective geometry could be used to house models of Euclidean and non-Euclidean geometries by making a choice of conic envelope. The associated families of points together with the cross ratio leads to a metric geometry that gives the models.

This book presents these developments in a clear, thorough appendix. The main part of the book treats the idea of a projective structure and how that organizes objects that are not simply lines in affine space. Casas-Alvero (Univ. of Barcelona, Spain) gives a careful exposition of the projective theory of quadrics, rich with detail, rigor, and motivation. He has crafted an accessible and thorough introduction to this beautiful subject. The book should be on the shelf of any serious undergraduate library.

--J. McCleary, Vassar College

Summing Up: Highly recommended. Upper-division undergraduates through researchers/faculty.

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