

Preface

Four Lectures on Elastic Fracture Mechanics

These four lectures were prepared during my sabbatical visit to ESPCI Paris Tech during the months of November 2013 to March 2014. During this time I was supported by Michelin Corporation, by ESPCI and by Total Corporation. The focus of these lectures is on certain fundamental aspects of elastic fracture mechanics that are difficult to find in textbooks. These lectures, two hours each, are given to students and faculties of ESPCI during the month of January 2014. My goal is to make these lectures as self-contained as possible, assuming only basic knowledge of solid mechanics. Some of the materials are taken from papers by James Rice and John Eshelby as well as from the nonlinear fracture mechanics book written by John Hutchinson. The review on large deformation theory in lecture 3 draws heavily from the lecture notes of Tim Healey, who teaches the nonlinear elasticity course in our department.

Finally, I thank Costantino Creton and Matteo Ciccotti for hosting me at ESPCI. Also, since these notes were prepared during a short period of time, I would be very grateful if readers would inform me of any errors which they detect.