

# Preface

This volume is dedicated to Joseph A. Wolf on the occasion of his 75th birthday. Participants at the conference in Bochum in Wolf's honor, which took place in early January 2012, had the chance to express their respect and their thanks for Joe's fundamental contributions to mathematics and to wish him continued good health and success for the coming years. We, the editors of this volume, would like to take this opportunity to put these wishes in writing.

Almost 60 of Joe's 75 years have been devoted to mathematics. At the age of 15, he was granted a Ford Foundation scholarship to begin his undergraduate studies at the University of Chicago. At first his parents were rather skeptical about this idea, but Adrian Albert, who had been a friend of Joe's father in their undergraduate days, calmed their worries. Joe started out in a broad liberal arts program but stimulated by lectures from Lang, Kaplansky, Spanier, and Chern, and with the support of Adrian Albert in the background, he soon gravitated to a concentration in mathematics. Early on Joe became particularly interested in Riemannian geometry. As a result, with the support of an NSF Graduate Fellowship, he stayed on in Chicago to do his graduate work with Chern. Courses from Helgason, MacLane, Palais, Sternberg, Stone, and Weil, in addition to those mentioned above, broadened his foundation. When it became clear that he would direct his research toward Riemannian geometry and homogeneous spaces, he helped organize a seminar on Cartan's work on symmetric spaces, the members of which included Chern, Helgason, Palais, and Sternberg.

At that time, the late 1950s, the spirit of the theory of finite groups was invading Chicago. For example, John Thompson was one of Joe's office mates. Maybe this contributed to Joe's optimism to suggest to Chern to consider the Clifford–Klein spherical space form problem as a thesis project. Chern found a way to smoothly indicate that Joe didn't yet know enough about finite groups. So Joe entered the area in a more realistic way by extending the results of Vincent for spheres to compact homogeneous spaces  $G/K$  where  $\text{rk}(G) = \text{rk}(K) + 1$  and  $G$  satisfies a certain cohomological condition. Later, in his book *Spaces of Constant Curvature*, now in its 6th edition, Joe gave the classification of complete Riemannian manifolds of constant positive curvature.

During his formative years, working in the mix of Riemannian geometry and Lie groups, Joe was fortunate to have had close contact with Borel during the last period of his work on his thesis and then later during his stay in 1960–1962 at the Institute and with Ehresmann and Tits in Paris during his postdoc in 1959. In 1962 he took an Assistant Professorship at Berkeley, where he was quickly promoted, arriving at the rank of Full Professor in 1966. Spaces of constant curvature played an important role in his thinking during these early days in Berkeley. However, he was also branching out into nearby areas. For example, he initiated his work with Korányi on Hermitian symmetric spaces during this time.

At the current count Joe's publication list has 167 entries. These works range from the analytic side of representation theory through contributions to classical Riemannian geometry to combinatorial and purely algebraic considerations. Length constraints do not allow us to even superficially discuss these works. However, we would like to at least underline the fact that one guiding theme in Joe's research has been geometry and representation theory of actions of real forms of semisimple groups on their associated flag manifolds. His interest in this direction stemmed from numerous discussions with Kostant, who already had a clear view of this subject, at the 1965 Boulder Summer School organized by Borel and Mostow. A more recent guiding theme has been the development of the theory of direct limit Lie groups and their representations.

There is no doubt that Joe Wolf will continue his productive work in mathematics in the years to come, and we wish him success in whatever endeavors he chooses.

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Lie Groups: Structure, Actions, and Representations  
In Honor of Joseph A. Wolf on the Occasion of his 75th  
Birthday

Huckleberry, A.; Penkov, I.; Zuckerman, G. (Eds.)

2013, XIV, 413 p., Hardcover

ISBN: 978-1-4614-7192-9

A product of Birkhäuser Basel