

**INVITED TALKS**

(list is complete from January 1997 to November 17, 2010)

1. 1971 (January), gave invited address at the Annual meeting of the ASL, Atlantic City, New Jersey, (1 hour).
2. 1971 (August), gave two invited addresses to the NATO Meeting at Cambridge University, England, on "Categoricity Relative to Ordinals," and "Philosophy of Set Theory," (each address 1 hour).
3. 1972 (Spring), gave invited address at Berkeley Logic Colloquium on "Beth's Theorem and Hyperdegrees of Borel Sets."
4. 1972 (Summer), gave invited address at AMS Meeting at Dartmouth, New Hampshire, on "Borel Sets and Hyperdegrees," (20 minutes).
5. 1972 (Summer), gave a series of invited talks at Cambridge University, England, on "Beth's Definability Theorem."
6. 1973 (Fall), gave invited address at the U.S.-Japan Conference of Proof Theory, Harvard University, (1 hour).
7. 1974 (Summer), invited speaker at the International Congress of Mathematicians, Vancouver, B.C., Canada, (50 minutes).
8. 1975 (February), gave invited talk at the Princeton University Logic Seminar on "Hilbert's Second Problem - Reformulations and Results," (1 1/2 hours).
9. 1975 (March), gave an invited address at the M.I.T. Set Theory Conference on "Categoricity with Respect to the Ordinals," (1 hour).
10. 1975 (Spring), invited speaker at AMS Meeting at St. Louis, Missouri, (20 minutes).
11. 1975 (Spring), invited panelist for joint symposium on "Church's Thesis" between the Association for Symbolic Logic and the American Philosophical Association, Chicago, Illinois, (2 hours).
12. 1975 (December), gave invited address at the Annual Meeting of the ASL, New York, on "The Logical Strength of Mathematical Statements," (1 hour).

13. 1976 (Summer), gave an invited address at the Rockefeller University Logic Conference on "A Programmatic Extension of Gödel's Incompleteness Theorems," (1 hour).
14. 1976 (Winter), gave a series of invited talks in seminar form at the Institute for Mathematical Studies in the Social Sciences of Stanford University on "The Syntax and Semantics of Mathematical Text."
15. 1977 (Spring), gave an invited lecture ( $\Omega$ -lecture) at the meeting of the  $\Omega$ -group at Oberwolfach on "The Future of Set Theory," (2 1/2 hours).
16. 1977 (Spring), gave two invited addresses at Oberwolfach, "Definability in Set Theory" meeting on "[Theorems Needing  $\aleph_1$  Ranks and [Theorems Needing Morse-Kelley," and "Remarks on the Foundations of Mathematics," (each 1 1/2 hours).
17. 1977 (Summer), gave an invited lecture at the Generalized Recursion Theory II meeting at Oslo, Norway on "Descriptive Analysis," (1 hour).
18. 1977 (December), gave an invited lecture at the M.I.T. Logic Conference entitled "On the Incompleteness of Axiomatic Set Theory," (20 minutes).
19. 1977 (December), gave an invited lecture at the Yale  $\Omega$ -group meeting on a book proposal entitled "Issues and Programs in Logic," (1 1/2 hours).
20. 1977 (December), gave an invited lecture ( $\Omega$ -lecture) at the Yale  $\Omega$ -group meeting entitled "On the Incompleteness of Axiomatic Set Theory."
21. 1978 (January), gave an invited lecture at the UCLA Logic Conference entitled "On the Incompleteness of Axiomatic Set Theory," (1 hour).
22. 1978 (January), gave an invited lecture at the Berkeley Logic Colloquium entitled "True, Combinatorial (As Opposed to Metamathematical) Statements of First Order Number Theory Independent of Higher Order Systems," (1 hour).
23. 1978 (February), gave an invited address at the University of Chicago series Contemporary Mathematics

from an Historical Viewpoint, entitled "On the Incompleteness of Axiomatic Set Theory," (1 hour).

24. 1978 (June), gave an invited address at the Kleene symposium at Madison entitled "Classically and Intuitionistically Provably Recursive Functions," (1 hour).

25. 1980 (January), gave an invited address at the UCLA Logic Conference entitled "Borel Structures," (1 hour).

26. 1980 (September), gave an invited address at the Midwest Model Theory Seminar at Notre Dame entitled "Translatability and Relative Consistency," (1 1/2 hours).

27. 1981 (November), gave an invited lecture at the Computer Science Theory Seminar at Carnegie-Mellon University entitled "Complexity of Real Functions," (1 hour).

28. 1982 (May), gave an invited lecture to the University of Rochester Computer Science Department entitled "Function Composition and Intractability," (1 hour).

29. 1984 (May), gave an invited lecture at the Philadelphia Logic Colloquium at University of Pennsylvania entitled "Necessary Uses of Abstract Set Theory," (1 hour).

30. 1984 (October), gave an invited lecture at the Princeton Philosophy Department entitled "Programs in the Foundations of Mathematics, (2 hours).

31. 1984 (October), gave an invited lecture at the Mid-Atlantic Mathematical Logic Symposium held at Princeton entitled "New Necessary uses of Abstract Set Theory," (1 hour).

32. 1984 (November), gave an invited lecture at the AMS special session on mathematical logic - applications to analysis, entitled "Provably Asymptotically Intractable Problems," (30 minutes).

33. 1985 (June), gave an invited lecture at the UCSD Math Colloquium entitled "Necessary uses of abstract set theory," (1 hour).

34. 1985 (October), gave an invited lecture at the Mid-Atlantic Mathematical Logic Symposium held at Cornell entitled "Necessary uses of Abstract Set Theory," (1 1/2

hours).

35. 1985 (December), gave an invited lecture at the Cal Tech Math Colloquium entitled "Necessary uses of Abstract Set Theory," (1 hour).

36. 1985 (December), gave an invited lecture at the Pacific Logic Meeting held at Cal Tech entitled "Necessary uses of Abstract Set Theory," (1 1/2 hours).

37. 1986 (January), gave an invited lecture at the special session on determinacy and large cardinals at the Annual Winter AMS Meeting in New Orleans entitled "Necessary uses of Abstract Set Theory," (20 minutes).

38. 1986 (April), gave an invited lecture at the University of Minnesota Math Colloquium entitled "Necessary uses of Abstract Set Theory," (1 hour).

39. 1986 (March 15 - April 15), gave an invited series of 10 lectures at the University of Minnesota Logic Seminar entitled "Computational Complexity of Real Functions," (each 1 1/4 hours).

40. 1986 (April), gave an invited lecture at the University of Chicago Math colloquium entitled "Necessary uses of abstract set theory," (1 hour).

41. 1986 (December), gave an invited lecture at the Lehigh University Math Colloquium entitled "Necessary Uses of Abstract Set Theory," (1 hour).

42. 1986 (December), gave an invited lecture at the Mid-Atlantic Mathematical Logic Symposium held at Lehigh University entitled "Independence results in Contemporary Combinatorics," (1 hour).

43. 1986 (December), gave an invited lecture at the University of Chicago Logic Seminar entitled "Independence results in Contemporary Combinatorics," (1 1/2 hours).

44. 1986 (December), gave an invited lecture at the Princeton University Philosophy Department entitled "Independence results in Contemporary Combinatorics," (1 1/2 hours).

45. 1987 (August), gave an invited lecture at the Berkeley Logic Colloquium entitled "Completeness of intuitionistic

logic," (1 hour).

46. 1987 (December), gave an invited lecture at the Harvard Mathematics Department entitled "Large integers, high rates of growth, and strong logical principles," (1 hour).

47. 1987 (December), gave an invited lecture at IBM Yorktown Heights entitled "Large integers, high rates of growth, and strong logical principles," (1 hour).

48. 1988 (February), gave an invited lecture at the University of Illinois Math Colloquium entitled "The incompleteness phenomena," (1 hour).

49. 1988 (April), gave a distinguished lecture series at the Indiana University Mathematics Department consisting of three lectures entitled "The incompleteness phenomena," "Borel functions and abstract set theory," and "Large integers, high rates of growth, and strong logical principles," (1 hour each).

50. 1988 (August), gave an invited lecture at the Centennial Celebration of the American Mathematical Society, entitled "The incompleteness phenomena," (1 hour).

51. 1989 (April), gave an invited lecture at the M.I.T. Logic meeting entitled "!" (1 hour).

52. 1989 (September), gave invited addresses to the U. Cal. Irvine workshop on the effective content of mathematical models in the social sciences, entitled "Foundations of absolute finitism," (2 hours), and "Reverse mathematics," (2 hours).

53. 1990 (January), gave invited lecture at the Berkeley Mathematics Colloquium entitled "The incompleteness phenomena," (1 hour).

54. 1990 (April), gave invited lecture at a meeting of the ASL at Penn State entitled "The incompleteness phenomena," (1 hour).

55. 1990 (May), gave invited lecture at MSRI in Berkeley, CA, entitled "Incompleteness: results and prospects," (1 1/2 hours).

56. 1993 (May), gave invited lecture at Sacks Symposium at

MIT, entitled "Min Recursion and the necessary use of large cardinals, (1 hour).

57. 1996 (March), gave opening 1 hour lecture at the annual meeting of the ASL at UW, Madison, entitled "Finite functions and the necessary use of large cardinals," (1 hour).

58. A Complete Theory of Everything, Workshop on the Philosophy of Mathematics, UCLA Philosophy Department, January 27, 1997, 3 hours.

59. Unprovable Theorems in Discrete Mathematics, Mathematics Colloquium, Cal Tech Mathematics Department, January 28, 1997, 1 hour.

60. Transfer Principles in Set Theory, Logic Colloquium, UCLA Mathematics Department, January 31, 1997, 90 minutes.

61. Unprovable Theorems in Discrete Mathematics, General Mathematics Lecture, UCLA Mathematics Department, January 31, 1997, 1 hour.

62. Formalization of Mathematics, Artificial Intelligence Seminar, UCSD Computer Science Department, February 3, 1997, 2 hours.

63. Unprovable Theorems in Discrete Mathematics, Mathematics Colloquium, UCSD Mathematics Department, February 6, 1997, 90 minutes.

64. Ramsey's Theorem and Enormous Lower Bounds, Theory Seminar, UCSD Computer Science Department, February 7, 1997, 1 hour.

65. Transfer principles from finite to transfinite, Logic Seminar, UI Urbana Mathematics Department, February 25, 1997, 1 hour.

66. Ramsey's Theorem and Enormous Lower Bounds, Complexity theory seminar, UI Urbana Mathematics Department, February 27, 1997, 1 hour.

67. Unprovable Theorems in Discrete Mathematics, Mathematics Colloquium, UI Urbana Mathematics Department, February 27, 1997, 1 hour.

68. History of the Demonstrable Unremovability of

Machinery, Logic Seminar, UI Urbana Mathematics Department, February 28, 1997, 1 hour.

69. Ramsey's Theorem and Enormous Lower Bounds, Theory Seminar, UC Berkeley Computer Science Department, April 7, 1997, 1 hour.

70. Transfer Principles in Set Theory, Logic Seminar, Stanford Mathematics Department, April 8, 1997, 75 minutes.

71. Formalization of Mathematics, SRI International, Menlo Park, CA, April 9, 1997, 75 minutes.

72. Unprovable Theorems in Discrete Mathematics, Mathematics Colloquium, UC Berkeley Mathematics Department, April 10, 1997, 1 hour.

73. Transfer Principles in Set Theory, Logic Seminar, UC Berkeley Mathematics Department, April 11, 1997, 90 minutes.

74. A Complete Theory of Everything, Logic Colloquium, UC Berkeley Logic, Philosophy, and Methodology of Science Group, April 11, 1997, 75 minutes.

75. A Complete Theory of Everything, Seminar in the Philosophical Problems in Logic, Princeton Philosophy Department, April 29, 1997, 3 hours.

76. Unprovable Theorems in Discrete Mathematics, Mathematics Colloquium, Princeton Mathematics Department, April 30, 1997, 1 hour.

77. Transfer Principles in Set Theory, Seminar in the Philosophy of Mathematics, Princeton Philosophy Department, May 1, 1997, 3 hours.

78. Ramsey's Theorem and Enormous Lower Bounds, Princeton DIMACS Seminar, Princeton Computer Science Department, May 1, 1997, 1 hour.

79. Transfer Principles in Set Theory, Logic Seminar, MIT Mathematics Department, May 7, 1997, 90 minutes.

80. Unprovable Theorems in Discrete Mathematics, Harvard/MIT/Brandeis/Northeastern Mathematics Colloquium, Harvard Mathematics Department, May 8, 1997, 1 hour.

81. Ramsey's Theorem and Enormous Lower Bounds, Theory of Computation Seminar, MIT Computer Science Department, May 9, 1997, 1 hour.
82. Axiomatizations of Set Theory, Logic Seminar, Stanford University, October 7, 1997, 75 minutes.
83. Unprovable Theorems in Discrete Mathematics, Stanford University Mathematics Colloquium, October 9, 1997, 1 hour.
84. From Russell's Paradox to Higher Set Theory, Stanford University Philosophy Colloquium, October 10, 1997, 2 hours.
85. Finite Trees and Large Cardinals, ASL Winter Meeting, Baltimore, Jan. 10, 1998, 45 minutes.
86. Unprovable Theorems in Discrete Mathematics, NYU Math Dept Colloq, April 26, 1999, one hour.
87. Complete Theory of Everything, NYU Philosophy Dept Seminar, April 28, 1999, 2 hours.
88. Enormous Integers in Real Life, NYU Math Dept Seminar, April 30, 1999, 1 hour.
89. The Future of Reverse Mathematics, AMS Summer Research Institute in Computability Theory, June 16, 1999, 45 minutes.
90. Some Decision Problems of Enormous Complexity, 14th Annual IEEE Symposium on Logic in Computer Science, LICS 99, Trento, Italy, plenary address, 1 hour, July 3, 1999.
91. Enormous Integers in Real Life, Math Dept Colloq, Univ of Michigan, October 5, 1999, 1 hour.
92. Discrete Independence Results, Logic Seminar, University of Michigan, October 6, 1999, 2 hours.
93. Enormous Integers in Real Life, Math Dept Colloq, Carnegie Mellon University, October 15, 1999, 1 hour.
94. Complete Theory of Everything, Logic Colloq, Carnegie Mellon University, October 14, 1999, 1 hour,
95. Issues in Foundations of Mathematics, I, Philosophy Dept Seminar, Carnegie Mellon University, October 12, 1999,

2 hours.

96. Issues in Foundations of Mathematics, II, Philosophy Dept Seminar, Carnegie Mellon University, October 13, 1999, 2 hours.

97. Enormous Integers in Real Life, Math Colloq, Cornell University, November 11, 1999, 1 hour.

98. Discrete Independence Results, Logic Seminar, Cornell University, November 11, 1999, 90 minutes.

99. Metamathematics of Ulm Theory and Reverse Mathematics, Logic Seminar, University of Chicago, November 16, 1999, 2 hours.

100. Enormous Integers in Real Life, Special Lecture, University of Chicago Math Dept, November 17, 1999, 1 hour.

101. Chains of Algebraic Sets, Topology Seminar, University of Chicago, November 18, 1999, 90 minutes.

102. Discrete Independence Results, New York City Logic Conference, November 20, 1999, 1 hour.

103. Panelist on panel discussion of Foundations of Mathematics, New York City Logic Conference, November 20, 1999, 2 hours.

104. The Mathematical Meaning of Mathematical Logic, The year 2000 celebration of the British Mathematical Colloquium, Leeds University, April 19, 2000, 1 hour Plenary Address.

105. Does Mathematics Need New Axioms?, Mathematics Colloq, UCSD Math Dept, May 30, 2000, 1 hour.

106. A Logician Looks at Program Verification, Theory Seminar, UCSD Computer Science Dept, May 31, 2000, 1 hour.

107. Foundations of Mathematics: past, present, and future, Seminar Talk, UCSD Philosophy Department, May 31, 2000, 2 hours.

108. Enormous Integers in Real Life, Special Combinatorics Talk, UCSD Math Dept, June 1, 2000, 1 hour.

109. Does Mathematics Need New Axioms?, panelist in panel

discussion, ASL 2000 meeting, June 5, 2000, 2.5 hours.

110. Enormous Integers in Real Life, Research program talk, Park City Mathematics Institute on Computational Complexity, Institute for Advanced Study, July 24, 2000, 1 hour.

111. Enormous Integers, Combinatorics Seminar, University of Minnesota Mathematics Dept, September 21, 2000, 1 hour.

112. Does Normal Mathematics Need New Axioms?, Mathematics Colloq, Univ. of Minnesota, September 21, 2000, 1 hour.

113. Foundations of Mathematics: past, present, and future, Philosophy Colloq, Univ. of Minnesota, September 21, 2000, 2 hours.

114. 6 Lectures in Reverse Mathematics, University of Wisconsin Mathematics Dept, October 2 - 13, 2000, 1 hour each.

115. Enormous Integers, Logic Seminar, University of Wisconsin Mathematics Dept, October 3, 2000, 1.5 hours.

116. Does Normal Mathematics Need New Axioms?, Mathematics Colloq, Univ. of Wisconsin, October 4, 2000, 1 hour.

117. The Incompleteness Phenomena, Gelfand Group, Rutgers University Mathematics Dept, October 23, 2000, 1 hour.

118. Boolean Relation Theory, Logic Seminar, Rutgers Math Dept, October 23, 2000, 1.5 hours.

119. Term Rewriting and Computational Complexity, Complexity Theory Seminar, Institute for Advanced Study, 1 hour.

120. Degrees of Algebraic Approximations, Algebraic Geometry Seminar, Princeton University Math Dept, October 24, 2000, 1.5 hours.

121. Foundations of Mathematics: past, present, and future, Logic Seminar, Princeton Philosophy Dept, October 25, 2000, 2 hours.

122. Does Normal Mathematics Need New Axioms?, Mathematics Colloq, Princeton University, October 25, 2000, 1 hour.

123. How To Use A Large Cardinal, Computer Science Theory Seminar, Princeton University CS Dept, October 26, 2000, 1 hour.
124. Enormous Integers, Combinatorics Seminar, Rutgers University Math Dept, October 26, 2000, 1 hour.
125. Foundations of Mathematics: past, present, and future, Philosophy Colloq, Rutgers University, October 26, 2000, 2 hours.
126. Does Normal Mathematics Need New Axioms?, Mathematics Colloq, Rutgers University, October 27, 2000, 1 hour.
127. Axioms for Mathematics, Basic Notions Seminar, Mathematics Department, Harvard University, October 30, 2000, 1 hour.
128. Foundations of Mathematics: past, present, and future, Philosophy Department Colloquium, Harvard University, October 31, 2000, 1.5 hours.
129. How To Use A Large Cardinal, Logic Seminar, Mathematics Department, MIT, November 1, 2000, 1 hour.
130. Does Normal mathematics Need New Axioms?, joint Brandeis-Harvard-MIT-Northeastern Math Colloquium series, at MIT Math Dept, November 2, 2000, 1 hour.
131. A Complete Theory of Everything, MIT Philosophy Dept Discussion Group, November 3, 2000, 2 hours.
132. Foundations of Mathematics: past, present, and future, Philosophy Colloquium, Cornell University, November 15, 2000, 2 hours.
133. Does Normal Mathematics Need New Axioms?, Math Colloq, Cornell University, November 16, 2000, 1 hour.
134. Term Rewriting and Computational Complexity, Computer Science Theory Seminar, Cornell University, November 17, 2000, 1 hour.
135. Plenary Address, Nonstandard Set Theory and Related Topics, CUNY, December 2, 2000, 1 hour.
136. Boolean Relation Theory I, Descriptive Set Theory Seminar, Math Dept, U Cal at Berkeley, December 4, 2000, 2

hours.

137. Boolean Relation Theory II, Recursion Theory Seminar, Math. Dept, U Cal at Berkeley, December 4, 2000, 2 hours.

138. Does Normal Mathematics Need New Axioms?, Math Colloq, University of California at Berkeley, December 7, 2000, 1 hour.

139. The Future of F.O.M., Midwest Philosophy of Math Workshop, Carnegie Mellon University, December 9, 2000.

140. Foundations of Mathematics: past, present, and future, main speaker in 3 hour Symposium on Foundations of Mathematics, joint ASL/APA meeting, December 28-29, 2000, New York City.

141. Boolean Relation Theory, Computability Theory Meeting, Oberwolfach, Germany, January 23, 2001, 1 hour.

142. Sketch of Reversal, Computability Theory Meeting, Oberwolfach, Germany, January 23, 2001, 1 hour.

143. The Future of Reverse Mathematics, Computability Theory Meeting, Oberwolfach, Germany, January 25, 2001, 1 hour.

144. Boolean Relation Theory, Rutgers Maml's Meeting, February 18, 2001, 1 hour.

145. The Future of Reverse Mathematics, Special Session on Reverse Mathematics at the 2001 Annual Meeting of the ASL, University of Pennsylvania, March 11, 2001, 35 minutes.

146. Does Normal Mathematics Need New Axioms?, Mathematics Colloquium, University of Toronto, March 14, 2001, 1 hour.

147. Term Rewriting and Computational Complexity, Computer Science Lecture, University of Toronto, March 15, 2001, 1 hour.

148. A Complete Theory of Everything, Philosophy Lecture, University of Toronto, March 16, 2001, 1 hour.

149. Boolean Relation Theory, Boston Logic Conference, May 11, 2001, 1 hour.

150. Turing Degrees, Boston Logic Conference, May 12, 2001,

1 hour.

151. Research on ways out of Russell's Paradox, Conference on Russell Paradox, Munich, Germany, June 4, 2001, 1 hour.

152. Panel on Meaning of Set Theory, Russell Paradox Conference, Munich, Germany, June 4, 2001, 2 hours.

153. Foundations of Mathematics related to Mathematical Practice, Ecole Normale Superiere, June 6, 2001, in collaboration with Bernard Teissier, 90 minutes.

154. Boolean Relation Theory, Foundations of Mathematics Seminar, Paris VII, June 7, 2001, 90 minutes.

155. Recent Independence Results, Plenary Address, 2001 ASL European Summer Meeting, Vienna, Austria, August 6-11, 2001, Vienna, Austria, 1 hour.

156. Borel Selection, Set Theory Workshop, Vienna, Austria, August 13-17, 2001, 1 hour.

157. Recent independence Results, Special Session on Proof Theory and Foundations, AMS Regional Meeting, Columbus, Ohio, September 22, 2001, 20 minutes.

158. Term Rewriting and Computational Complexity, Stanford Computer Science Department, October 30, 2001, 1 hour.

159. Does Normal Mathematics Need New Axioms?, Mathematics Department Colloquium, Stanford University, November 1, 2001, 1 hour.

160. Current Status of Foundations of Mathematics, Philosophy Department Colloquium, Stanford University, November 2, 2001, 2 hours.

161. Almost Universal Languages, Midwest Philosophy of Math Workshop, Notre Dame, November 10, 2001, 1 hour.

162. Boolean Relation Theory, Logic Colloquium, Notre Dame, November 12, 2001. 1 hour.

163. Current Status of Foundations of Mathematics, Philosophy Department, Notre Dame, November 14, 2001, 2 hours.

164. A Complete Theory of Everything, Focus Seminar in

Philosophy of Mathematics, Notre Dame, November 15, 2001, 2 hours.

165. Enormous Integers in Real Life, CCR, Princeton, New Jersey, November 19, 2001, 1 hour.

166. Term Rewriting and Computational Complexity, Computer Science Theory Seminar, UCSD, November 28, 2001, 1 hour.

167. Does Normal Mathematics Need New Axioms?, Mathematics Department, UCSD, November 29, 2001, 1 hour.

168. Enormous Integers in Real Life, CCR, San Diego, CA, November 29, 2001, 1 hour.

169. Current Status of Foundations of Mathematics, Colloquium, Logic and Philosophy of Science Department, Univ. Cal. at Irvine, November 30, 2001, 2 hours.

170. Borel Selection, Logic Seminar, Univ. Cal. at Irvine, November 30 - December 3, 2001, 1 hour.

171. Does Normal Mathematics Need New Axioms?, Mathematics Department Colloquium, Cal Tech, December 5, 2001, 1 hour.

172. Enormous Integers in Real Life, Combinatorics Seminar, Cal Tech, December 6, 2001, 1 hour.

173. Boolean Relation Theory, Logic Seminar, UCLA Mathematics Dept, December 7, 2001, 1 hour.

174. Programs in the Foundations of Mathematics, Philosophy of Math Workshop, UCLA Philosophy Dept, December 10, 2001, 3 hours.

175. Gödel Lecture, Issues in the Foundations of Mathematics, Annual meeting of the ASL, Las Vegas, Nevada, June 1-4, 2002, 1 hour.

176. Invited Lecture, Borel selection, Conference in honor of Jan Mycielski, University of Colorado, Boulder, June 1-2, 2002.

177. Rademacher Lectures, Necessary uses of abstraction, Mathematics Department, University of Pennsylvania, September 16-20, 2002, 4 one hour lectures.

179. Invited lecture, Borel selection, Rutgers MamlS

Meeting, September 28, 2002, one hour.

180. Invited lecture, Special Session, AMS meeting, Baltimore Maryland, January 15-18, 2003, one hour.

181. Boolean Relation Theory, Set theory seminar, UC Berkeley, December 1, 2003, 1.5 hours.

182. Boolean Relation Theory, Logic Seminar, Stanford University, December 2, 2003, 1.5 hours.

183. Reflection, Center for Humanities, Stanford University, December 3, 2003, 1.5 hours.

184. Unprovable Theorems, Stanford Mathematics Colloquium, December 4, 2003, 1 hour.

185. Unprovable Theorems, University of Nevada at Las Vegas, Mathematics Colloquium, March 25, 2004, 1 hour.

186. RM Coding Theory, Special Session, AMS annual meeting, Atlanta, Georgia, January 6, 2005, 45 minutes.

187. Invited Lecture, UCLA Philosophy of Mathematics Workshop, From Virtual to Actual, April 18, 2005, 2 hours.

188. Invited Lecture, Cal Tech Mathematics Colloquium. Unprovable Theorems, April 19, 2005, 1 hour.

189. Invited lecture, UCLA Logic Seminar. The Inevitability of Logical Strength, April 22, 2005, 1 hour.

190. Invited Lecture, UCLA Logic Colloquium. Boolean Relation Theory, April 22, 2005, 1.5 hours.

191. Invited Lecture, Gödel Centenary 2006, April 27-29, 2006, Vienna, Austria.

192. Invited Lecture (invited by OSU Math Dept Colloq), Clay Millenium Problem:  $P = NP$ , October 20, 2005, 1 hour.

193. Invited Panelist, On Unknowability, Godel Centenary 1906-2006, April 28, 2006, Vienna, Austria, 1 hour panel.

194. Invited Lecture, Forty Years On His Shoulders, Plenary Lecture, Gödel Centenary 1906-2006, April 29, 2006, Vienna, Austria, 45 minutes.

195. Invited Lecture, Logic Colloquium 06, Nijmegen, Netherlands, July 28, 2006.
196. Invited Panelist, Symposium on Gödel, Logic Colloquium 06, Nijmegen, Netherlands, July 28, 2006.
194. Invited Lecture, Forty Years On His Shoulders, Plenary Lecture, Gödel Centenary 1906-2006, April 29, 2006, Vienna, Austria, 45 minutes.
195. Invited Lecture (invited by OSU Computer Science Dept Colloq), Adventures in the Verification of Mathematics, June 8, 2006, 1 hour.
196. Invited Lecture, Search for Consequences, Logic Colloquium 06, Nijmegen, Netherlands, July 28, 2006, 1 hour.
197. Invited Panelist, Gödel's legacy in mathematical philosophy, Logic Colloquium 06, Nijmegen, Netherlands, July 28, 2006. 1.5 hour panel.
198. Invited Lecture, Contemporary perspectives on Hilbert's second problem and the Gödel incompleteness theorems, AMS panel, New Orleans, January 6, 2007. 1.5 hours panel.
199. Invited Lecture, Computer assisted certainty, Distinguished Lecture Series, Department of Computer Science, University of Kentucky, January 25, 2007, 1 hour.
200. Invited Lecture, Concept Calculus, Mathematical Methods in Philosophy, Banff, Canada, February 21, 2007, 1 hour.
201. Nineteenth Annual Tarski Lectures, Interpretations of Set Theory in Discrete Mathematics and Informal Thinking: #1, Interpretations, According to Tarski, April 9, 2007, #2, Interpreting Set Theory in Discrete Mathematics: Boolean Relation Theory, April 11, 2007, Interpreting Set Theory in Informal Thinking: Concept Calculus, April 13, 2007. Department of Mathematics, Univ. Calif. Berkeley, 1 hour each.
202. Invited Lecture, Progress in Program Verification, Google, Mountain View, California, November 26, 2007.
203. Invited Panelist, "Logic for Philosophy," Eastern

Division of American Philosophical Association, 2 hour panel, Baltimore, December 27-30, 2007. One hour talk on Concept Calculus.

204. Invited Lecture, Concept Calculus, CUNY Graduate Center, February 21, 2008. 90 minutes.

205. Invited Lecture, Progress in Software Verification, CUNY Graduate Center, February 21, 2008. 1 hour.

206. Invited Lecture, Unprovable Theorems, CUNY Graduate Center, February 21, 2008. 1 hour.

207. University Distinguished Lecture Series, LOGIC: Interdisciplinary Adventures in Mathematics, Philosophy, Computer Science, and Education, April 23, 2008. 1 hour.

208. Concept Calculus, Carnegie Mellon University, March 26, 2009, Pure and Applied Logic Colloquium.  
<http://www.math.ohio-state.edu/%7Efriedman/> Lecture Notes, #41. 1 hour.

209. Boolean Relation Theory, Carnegie Mellon University, March 27, 2009, Mathematical Logic Seminar.  
<http://www.math.ohio-state.edu/%7Efriedman/> Lecture Notes, #42. 1 hour.

210. Decision Problems in Strings and Formal Methods, Carnegie Mellon University, Theory/POP Seminar, March 27, 2009. <http://www.math.ohio-state.edu/%7Efriedman/> Lecture Notes, #43. 1 hour.

211. Foundational Adventures for the Future, Honoree Lecture at the Foundational Adventures Conference in honor of Harvey Friedman's 60th Birthday, Columbus Ohio, May 14-17, 2009. Lecture delivered May 15, 2009.  
<http://www.math.ohio-state.edu/%7Efriedman/> Lecture Notes, #44. 1 hour.

212. Min Recursion and the Proof Theory of Set Theory, Leeds Symposium on Proof Theory and Constructivism, Leeds University, July 6, 2009. 1 hour.

213. Unprovable Theorems, Mathematics/Philosophy talk at Harvard University, October 8, 2009. <http://www.math.ohio-state.edu/%7Efriedman/> Lecture Notes, #48. 90 minutes.

214. Decision Problems in Strings and Formal Methods, Harvard University, Computer Science Theory Seminar, October 9, 2009. <http://www.math.ohio-state.edu/%7Efriedman/> Lecture Notes, #43. 1 hour.
215. Concept Calculus, University of Paris, Philosophy Seminar, October 19, 2009. <http://www.math.ohio-state.edu/%7Efriedman/> Lecture Notes, #41. 2 hours.
216. Concept Calculus, University of Nancy, Nancy, France, Philosophy of Mathematics Workshop, October 22, 2009. <http://www.math.ohio-state.edu/%7Efriedman/> Lecture Notes, #41. 1 hour.
217. Boolean Relation Theory and More, MIT Logic Seminar, November 3, 2009. 90 minutes.
218. Concept Calculus, MIT Philosophy Department, November 4, 2009. <http://www.math.ohio-state.edu/%7Efriedman/> Lecture Notes, #41. 2 hours.
219. Decision Procedures for Verification, MIT Computer Science Theory Seminar, November 4, 2009. <http://www.math.ohio-state.edu/%7Efriedman/> Lecture Notes, #46. 1 hour.
220. Unprovable Theorems, Boston Mathematics Colloquium, held at MIT, November 5, 2009. <http://www.math.ohio-state.edu/%7Efriedman/> Lecture Notes, #48. 1 hour.
221. Strict Reverse Mathematics, Reverse Mathematics Workshop, University of Chicago, November 7, 2009. <http://www.math.ohio-state.edu/%7Efriedman/> Lecture Notes, #47. 1 hour.
222. Unprovable Theorems, Mathematics Colloquium, University of Bristol, December 15, 2009. <http://www.math.ohio-state.edu/%7Efriedman/> Lecture Notes, #48. 1 hour.
223. LOGIC: Interdisciplinary Adventures in Mathematics, Philosophy, Computer Science, and Education, December 15, 2009. Bristol University Institute for Advanced Study. <http://www.bris.ac.uk/ias/events/2009/356> 1 hour.
224. 50 hours of detailed talks on the Boolean Relation Theory book manuscript, December 13 - 20, 2009, [http://www.maths.bris.ac.uk/~maaib/fom\\_meeting/main.html](http://www.maths.bris.ac.uk/~maaib/fom_meeting/main.html)

225. Pi01 Consequences of Large Cardinal Hypotheses, Conference in honor of Richard Laver, University of Colorado at Boulder, February 6, 2010. 40 minutes.
226. Shocking(?) Unprovability, Lecture at the Mathematics Department of The Ohio State University, April 16, 2010. 20 pages.
227. Aspects of Constructive Set Theory and Beyond, Amsterdam Conference on Set Theory, Classical and Constructive, 1 hour, May 6, 2010, 20 pages.
228. Concrete Incompleteness from EFA Through Large Cardinals, May 10, 2010, Institute for Logic, Language, and Computation, University of Amsterdam, 2 hours. 31 pages.
229. Combining Decision Procedures for the Reals, July 5, 2010, Intel Corporation, Hillsboro Oregon, 1 hour.
230. Decision Procedures for Verification Involving Strings, July 5, 2010, Intel Corporation, Hillsboro Oregon, 1 hour.
231. Concrete Mathematical Incompleteness, July 6, 2010, Intel Corporation, Hillsboro Oregon, 1 hour.
232. Applications of Hilbert's 10th to Euclidean Geometry, Definability in Number Theory Meeting, Ghent University, Belgium, September 3, 2010, 1 hour.
233. Concrete Mathematical Incompleteness, Department of Mathematics, Ghent University, Belgium, September 8, 2010, 1 hour.
234. Concrete Mathematical Incompleteness, Max Planck Institute for Mathematics, Bonn, Germany, September 9, 2010, 1 hour.
235. Boolean Relation Theory and Incompleteness. Sept 10, 2010, Max Planck Institute for Mathematics, Bonn, Germany, 1.5 hours.
236. Recent Advances in Unprovability (Workshop on Concrete Incompleteness), Ghent University, Belgium, September 6 - 8, 2010. 15 hours of lectures on various topics.
237. Simple Comprehension Axioms, October 16, 2010,

Workshop on Set Theory and the Philosophy of Mathematics,  
Philosophy Department, U. Penn, Philadelphia, October 15 -  
17, 2010, 1 hour.

238. First, Second, and Higher Order Logic and Set  
Theory, Department of Philosophy, University of London,  
Birkbeck, November 4, 2010, 2 hours.

239. Simple Comprehension Axioms, Department of Philosophy,  
University of London, Birkbeck, November 5, 2010, 2 hours.

240. Concrete Mathematical Incompleteness, Department of  
Mathematics, University of Cambridge, England, November 8,  
2010, 1 hour.

241. Boolean Relation Theory, Department of Mathematics,  
University of Cambridge, England, November 8, 2010, 2  
hours.

242. Concrete Mathematical Incompleteness, Department of  
Computer Science, Sapienza University of Rome, Italy,  
November 12, 2010, 1 hour.

243. Boolean Relation Theory, Department of Computer  
Science, Sapienza University of Rome, Italy, November 12,  
2010, 1 hour.