BIG GAME HUNTING FOR GRADUATE STUDENTS IN MATHEMATICS

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Abstract. Considerable work has been done in the last century on catching lions ([1]-[7]) using various techniques from mathematics and other natural sciences. We present a few techniques from basic areas of mathematics that are also accessible to graduate students. We would like to dedicate this manuscript to Hector Pétard, and his wife Betti Pétard (*nee* Bourbaki).

0.1. **The Stochastic Method.** We observe that lions are not elephants ; therefore they are forgetful and memoriless. Thus they satisfy the Markov property (see [10]). Limiting ourselves to males, if necessary, we observe that they are clearly irreducible and aperiodic. Hence they converge to a stationary distribution. The capture of a stationary lion is left as an exercise to the neophyte.

0.2. **Algebraic Geometry - I.** Clearly, a sick lion is easily captured. A healthy lion is a fine lion. But we know that affine lines have no sense of direction or origin ; hence they are easily captured as well. For references for this solution and the next, see [9].

0.3. **Algebraic Geometry - II.** One notes that a lion is a mammal (in particular, a lion is neither a fish nor a reptile). Thus it does not possess scales. But a scaling invariant lion is projective. By earlier results one has tame lions. Twist one of them, and place it over our projective lion ; one thus gets a twisted lion bundle, and the desired lion is entangled.

0.4. **Lie Theory - I.** One notes that lions occur in groups - namely, Lieo groups. These can move about the Sahara desert, thus acting on it transitively. Since the Sahara desert is clearly a manifold, it is a homogeneous space. Thus every point has a stabilizer subgroup, that is, each lion in the subgroup stabilizes the point. A lion that stays at this point may be easily captured by the neophyte (as above). For this and the next part, a somewhat useful reference is [8].

Key words and phrases. Lion, Sahara, desert.

0.5. **Lie Theory - II.** We observe that catching lions is either easy or not. If it is easy, we leave the problem to the reader; for now, we assume that the situation is complexified.

We consider the Sahara desert representation of the lions, all of whom are loyal to their pride; this is representing their group rather simply. It is thus a simple, faithful representation of the Lieo group.

However, we also observe (cf. National Geographic) that lions commute with each other. Thus this Lie group is abelian, and hence has only one-dimensional characters.

In the proud representation considered above, the character given by intelligence, would then be a power of the pride character. Since pride is not powerful enough to yield any intelligence, lions are stupid. To capture a stupid lion is easy.

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