1154-22-609 **Marisa Gaetz*** (`mgaetz@mit.edu`). *Dual Pairs in Complex Reductive Groups.* Preliminary report.

In Roger Howe's 1989 paper, "Remarks on classical invariant theory," Howe introduces the notion of a *dual pair of Lie subalgebras* – a pair $(\mathfrak{g}_1, \mathfrak{g}_2)$ of reductive Lie subalgebras of a Lie algebra $\mathfrak{g}$ such that $\mathfrak{g}_1$ and $\mathfrak{g}_2$ are each other's centralizers in $\mathfrak{g}$. This notion has a natural analog for algebraic groups; namely, a *dual pair of subgroups* is a pair (G_1, G_2) of reductive subgroups of an algebraic group G such that G_1 and G_2 are each other's centralizers in G. We present substantial progress towards classifying the dual pairs of the complex classical groups ($GL(n, \mathbb{C})$, $SL(n, \mathbb{C})$, $Sp(2n, \mathbb{C})$, $O(n, \mathbb{C})$, and $SO(n, \mathbb{C})$) and their projective counterparts ($PGL(n, \mathbb{C})$, $PSp(2n, \mathbb{C})$, $PO(n, \mathbb{C})$, $PSO(n, \mathbb{C})$). The classifications of dual pairs in $Sp(2n, \mathbb{C})$, $GL(n, \mathbb{C})$, and $O(n, \mathbb{C})$ are known, but lack a unified explicit treatment; we provide such a treatment. Additionally, we classify the dual pairs in $SL(n, \mathbb{C})$ and $SO(n, \mathbb{C})$, and present partial progress towards classifying the dual pairs in $PGL(n, \mathbb{C})$ and $PSp(2n, \mathbb{C})$. (Received September 08, 2019)