

# Eine Woche, ein Beispiel

## 8.20. diagonalizable group

Ref:

[Borel91]: Borel, Linear Algebraic Groups  
<https://link.springer.com/book/10.1007/978-1-4612-0941-6>

[PerrinAG]:  
<http://relaunch.hcm.uni-bonn.de/fileadmin/perrin/ag-chap3.pdf>  
<http://relaunch.hcm.uni-bonn.de/fileadmin/perrin/ag-chap4.pdf>

[Eberhardt23]: lecture notes of "spaces in GRT"  
<https://jenseberhardt.com/teaching/W2324data/Spaces%20in%20GRT.pdf>

In this document,  $\kappa$  is a field. In [PerrinAG],  $\kappa = \bar{\kappa}$  ;  
in [Eberhardt23],  $\kappa = \bar{\kappa}$ ,  $\text{char } \kappa = 0$

<https://mathoverflow.net/questions/12118/what-is-an-algebraic-group-over-a-noncommutative-ring>  
<https://mathoverflow.net/questions/448426/is-diagonalizability-a-local-property>

gpSch :	scheme	+	gp	
Alggp :	variety	+	gp	= $G_p \text{Sch}_\kappa + \text{f.t.}$
Aff Alggp :	affine	+	Alggp	= linear alg gp
AbVar :	(conn)proj	+	Alggp	

<https://math.stackexchange.com/questions/337148/how-does-an-affine-algebraic-group-become-a-group-scheme>

Chevalley's structure thm. [wiki] For  $\kappa$  perfect,  
every sm conn alggp is an extension of an abelian variety by sm conn linea alggp.

We mainly follow [Borel91, §8] in the following material.