

# ASYMPTOTIC SMOOTHNESS, CONVEX ENVELOPES AND POLYNOMIAL NORMS

**R. GONZALO**  
**J. A. JARAMILLO**  
**DIEGO YÁÑEZ**

UNIVERSIDAD POLITÉCNICA DE MADRID  
UNIVERSIDAD COMPLUTENSE DE MADRID  
UNIVERSIDAD DE EXTREMADURA

ABSTRACT. In this talk we introduce a suitable notion of asymptotic smoothness on infinite dimensional Banach spaces and we prove that under some structural restrictions on the space, the convex envelope of an asymptotically smooth function is asymptotically smooth. Furthermore, we compute the best order of the modulus of convexity of a polynomial norm.