The Sun&Earth space expansion value

The space expansion can be measured on Earth-size is about ~0.15 millimeters per year, and more visible is Sun–size grows every year a hundred times greater, thus on average 0.01645 m, thus in a century 1.64 m, depending on time and radius. The rule can be determined exactly and also should be visible and approximately per year, is V = H·R (Hubble constant in Megaparsec multiplied by the radius of the star). V[Km/s]=(100+/-20)·10^{-8} ·R[pc] (5.5) Gravity [1]

1 m = 3.24·10^{-17} [pc]

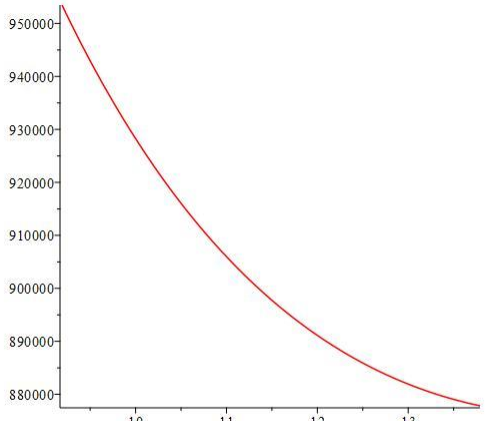
V is speed, and Radius R is in parsecs. H = 71000m/s/megaparsec
Increase in the Sun's radius by 10cm per year nowadays.
Earth-size growth is ~0.2 mm/year according to (12.2) Gravity [1]
The exact value can be measured by laser interferometry in the same way as Gravitational Wave detection. The amazing thing is that space is expanding since the Big Bang with a higher radius rate, and it's slowing at some radius close to 2Rs ~2·1.56·10^{26} m, so nothing can escape the Local Universe. Also, the Hubble constant is not truly constant; it is only approximately constant for limited radius values and has an approximate constant level, see "Hubble constant is not a constant"
We can do a better calculation of the space radius increase of the Sun with the equation of the muon neutrino flux per year. Calculus link: http://www.michaelvio.byethost8.com/Lambda.pdf

$$\int_{r_0}^{2\cdot R_S}\left(\frac{C(r-r_0)(r-2R_s)}{4\cdot\pi\cdot r^2}\right)dr=\frac{47}{16.418}=2.863$$

(where R_s = 8.20933Gly; 2Rs = 16.418 Gly & $r_0 \subseteq$[0.00828..0.290]Gly integrating with respect to r; The space evolves by the muon neutrino flux in Gly:

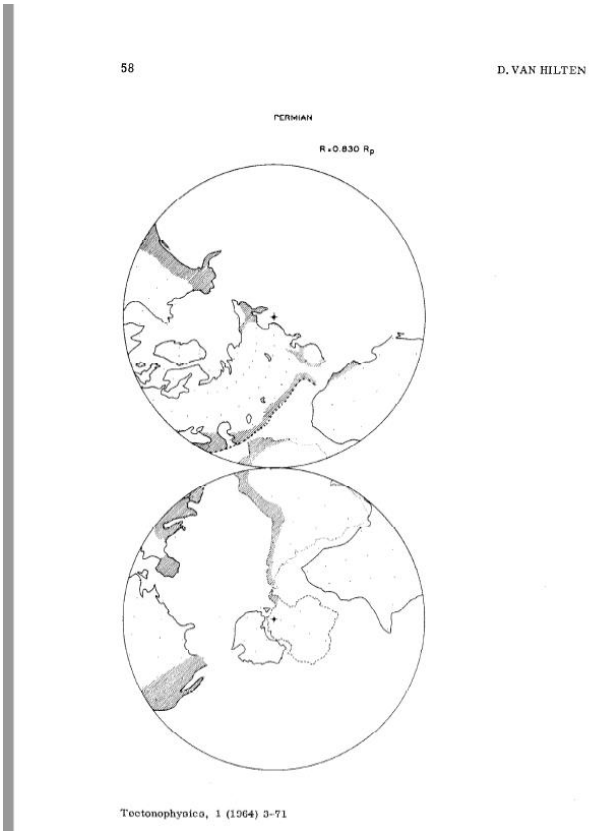
$$\Lambda=-\frac{1.02252}{4\cdot\pi}+\frac{17.0842}{4\cdot\pi\cdot \mathrm{r}}-\frac{4.8684}{4\cdot\pi\cdot r^2}$$

With r in billion Light Years, thus r = 0.290 .. 16.41866, the result is Λ = 2.863 times higher, the hole expansion of LU. Thus, we have the space growth starting at r = 9.19 billion light-years now of the Sun's birth until now 13.79, we divide the growth by the temporal interval 4.6 billion years, multiplied by R_{Sun} in meters, equal = 75657341.77 meters.
Thus, for the Sun, the average growth rate Λ_{Sun} is equal to 16.44 cm per year, and for the Earth, 0.15 mm/year. Thus, the growth depends on the radius and time. The rough calculus: the Sun's growth in 4.6 billion years is over 75657.34 km, thus, a growth of 10.865% (The increase of Earth's radius with 674.6 km, so 10.589%, but starting 4.5 billion years ago, when expansion was almost six times greater than today. (The increase of the Sun's radius varied from 60 cm per year at the formation of the star to 10 cm / per year nowadays).



The ancient Earth was smaller about 5546 km in concordance with Van Hilten [2] Paleomagnetic "Tectonophysics" published in 1964 (page 41) in which $R_{Permian} = 0.83 \cdot R_{actual}$ as in link:

https://www.sciencedirect.com/science/article/abs/pii/0040195164900289



We can calculate the total dilatation of the Sun in 4.6 billion years (very good concordance with calculus) in the link below:

Calculus link: http://www.michaelvio.byethost8.com/SunEarth.pdf

Gravity [1] https://kupdf.net/download/1982-ioan-n-popescu-gravitatia_5a5e726be2b6f5605ccd28b2_pdf

REFERENCES

[1]. *Ioan N. Popescu, Gravitatia* -Editura Stiintifica si Enciclopedica Bucuresti *1982 Cap 12.1.4* pag. *576; Ioan N. Popescu,* Gravity – 1982 *edition, Chap. 12.1.4 , p.576.*

[2]. *Science Direct Journals & Books* Tectonophysics Volume 1, Issue 1, August 1964, Page 41, 38-71
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